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IN Fayetteville NORTH CAROLINA

Erected in 1838, stands in the center of the city on the original site of the Old State House, which prior to 1789 housed the North Carolina State Government and was the Capitol of the Commonwealth.

Fayetteville, named in honor of General Lafayette, with her glorious history and wonderful climate, is the furthest Inland Port in the State of North Carolina, being located on the Cape Fear River at the head of navigation.

It is in the midst of a rich agricultural district, tobacco being one of the principal commodities produced. Cotton and rayon mills, box, veneer, brick and other manufacturing plants give employment to thousands. Fayetteville is a trading center for the district within a fifty mile radius.

"Ye Olde Market House" and nearby Fort Bragg, the nation's largest Field Artillery Post, are points of interest.

Fayetteville's bountiful water supply comes from four lakes with a reserve of 900,000,000 gallons. It is sand filtered from a water shed of eight miles in length and measured by Pittsburgh Water Meters.

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PITTSBURGH WATER METERS

Unemployment Relief, WPA, and Housing

Sixty Mayors Urge Continued WPA Aid

A REPORT to the Senate Committee on Unemployment, submitted on January 22 by the United States Conference of Mayors, reproduces statements from sixty of the larger cities in response to the following questions:

1. Does unemployment and relief continue to be a serious problem in your city—and what are the prospects for this winter and spring?
2. Is it your judgment that in order to meet the situation the Federal Government must continue its work program on the same or even an increased basis during the next few months?
3. Is the financial condition of your city such as to warrant increasing the financial contributions of the city in any future Federal program?
4. Has recent additional unemployment in your city, if any, made the relief problem more serious?

In general, the replies from the cities are strikingly uniform. Summarized briefly, the survey shows:

1. That relief continues to be a serious problem in the cities studied. In some cases, the relief load is heavier than at any time in the past three years.
2. If the problem is to be met adequately, it will be necessary for the WPA not only to maintain its present program but to *expand* its program in certain areas.
3. In general, the cities report that they are contributing all that they can in meeting the costs of direct relief and for the local share of the WPA program.
4. The recent business recession has in a number of cities brought about substantial increases in the relief rolls.

While THE AMERICAN CITY agrees with the United States Conference of Mayors that continued, and in some cities increased, financial aid from the Federal Government for local public works is essential in the present crisis, there can be no doubt that many municipalities with ample taxing and bonding powers are failing to play their proper part in unemployment relief and in providing for their citizens needed public improvements and services. In many other cases city governments are seriously handicapped by restrictions in state laws whose amendment would be in the public interest.

Mayor Lee D. Schroy of Akron, for example, cites the inability of his city to raise money by bond issues "which require approval of the people, and a 65 per cent majority to carry an issue."

The problem of another Ohio city—Lakewood—is outlined by its Mayor, A. I. Kauffman, as follows:

"In the city of Lakewood the assessable valuation was reduced 38 per cent in a period of four years, from 1930 to 1933 inclusive. In addition to this, the electors of the state of Ohio voted a constitutional amendment limiting the rate of taxation for operating purposes to 10 mills instead of the previous 15 mills—another drastic reduction. The state then established a sales tax to provide for the reductions theretofore made, but it is not sufficient to provide the losses sustained by the two items of reduction.

"At this time by non-action and non-leadership in the state of Ohio, the political subdivisions are required to bear their own relief loads. Some effort is being made to provide state funds; but, if the indigent people do not eat until such provision is made, then I fear many of them will not need any food. The poor-relief conditions in the state of Ohio are in a most critical condition at this time. Many of the municipalities in the state are now bonded to the extent that further bonds cannot be issued without a vote of the people; and the people, in the past few years, have rebelled against voting additional bonds or levies."

Mayor Ross D. Rogers of Amarillo points out that "the general laws of the state of Texas do not permit financial contribution on the part of cities toward relief."

Construction Industry Criticizes WPA

IN a statement issued January 19, by the Associated General Contractors of America, Inc., its Managing Director, E. J. Harding, urges continuation of Federal construction activities, but criticizes the WPA policy of keeping large numbers of men busy with picks and shovels, instead of employing modern machinery which will do the work much more efficiently at a considerable saving in cost. Says Mr. Harding:

"Construction activity is of general benefit to all industries because it means the purchase of large quantities of the products of the heavy goods industries, but WPA work-relief utilizes little in the way of equipment and materials, and consequently affords no stimulus to the activity of these industries. . . . It seems obvious that the work-relief program should be directed toward relieving the industrial unemployment by the use of up-to-date methods and equipment which will employ relatively few men on the job as compared with the indirect labor which the job stimulates in the factories."

More Than $150,000,000 Earmarked for New Low-Rent Housing Projects

NATHAN STRAUS, Administrator of the United States Housing Authority, announced that earmarking of Federal funds for low-rent housing projects up to January 21 totals $158,995,000. The list follows:

Alabama	
Birmingham	$4,500,000
Mobile	1,400,000
Connecticut	
Bridgeport	3,600,000
Florida	
Jacksonville	1,000,000
St. Petersburg	900,000
Tampa	1,500,000
Georgia	
Augusta	1,125,000
Illinois	
Chicago	16,000,000
East St. Louis	1,500,000
Peoria	1,500,000
Indiana	
Decatur	50,000
Kentucky	
Covington	1,400,000
Louisville	4,000,000
Louisiana	
New Orleans	7,200,000
Maryland	
Annapolis	400,000
Massachusetts	
Boston	9,000,000
Lowell	2,700,000
Michigan	
Detroit	10,000,000
Nebraska	
Omaha	2,100,000
New York	
Buffalo	4,900,000
New York City	18,000,000
Schenectady	1,400,000
Syracuse	2,500,000
Yonkers	2,200,000
Ohio	
Cincinnati	8,000,000
Cleveland	9,000,000
Columbus	1,500,000
Dayton	3,000,000
Toledo	1,800,000
Youngstown	3,600,000
Pennsylvania	
Allegheny County	1,800,000
Allentown	1,350,000
Chester	1,250,000
McKeesport	900,000
Philadelphia	12,000,000
Pittsburgh	10,000,000
Scranton	1,000,000
South Carolina	
Charleston	900,000
Columbia	800,000
Tennessee	
Johnson City	300,000
Memphis	1,000,000
Texas	
Austin	450,000
West Virginia	
Charleston	1,200,000
Morgantown	270,000

Funds earmarked to date are drawn from $300,000,000 of the $500,000,000 made available through the United States Housing Act of 1937, which provides for $100,000,000 the first year and $200,000,000 for each of the second and third years. Under the act no one state can have more than 10 per cent of the total funds.

The Administrator does not plan at this time to extend earmarkings into the third year's $200,000,000.

The Administrator emphasized that the tentative earmarkings are not based on the approval of specific projects nor do they mean that a complete financial set-up has been arranged and approved for these cities. They indicate merely that the United States Housing Authority is satisfied that the local authorities in the cities are qualified and equipped to do business and are making an earnest effort to meet the conditions of the Act. The earmarkings also indicate that there is urgent need for rehousing slum dwellers in these communities. In some cases state enabling legislation will be necessary.

In each instance a comprehensive program for slum-clearance and low-rent housing developments has been presented to the Administrator. Earmarking, however, does not carry with it even tentative approval of specific projects.

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*The figure 19,000,000 is for the United States only. The total becomes 35,000,000 when you add the overseas telephone connections of the Bell System.

Do you mention THE AMERICAN CITY? Please do.

Our Municipal Notebook

Some Facts About Electric Transit

WHERE passenger loads require headways of less than three minutes, trolley cars are the logical vehicle;—trolley coaches can be used economically even up to headways of 15 minutes;—beyond that, gasoline buses are the obvious vehicle. This and other information of interest to municipal officials was presented on January 24 at the convention of the American Institute of Electrical Engineers, held in New York.

A million dollars' worth of study and development has produced the P. C. C. trolley car, with 600 of them now operating in seven cities. High-temperature insulation in the form of spun-glass-fiber tape has helped to reduce motor-weight from 2,180 pounds ten years ago to 625 pounds in the modern car. Pick-up, then 1½ miles per hour per second, is now 4¾ miles, providing a new experience for motorists who try to beat the car to a getaway. Braking is slightly under this rate, with plenty of excess braking capacity available. Schedule time is increased 5 minutes on, say, a 4½-mile run.

The $9,000,000 modernization program in Indianapolis planned in 1932 is finishing this year to the amount of $8,000,000, with the 90 new street cars grossing 10-12 per cent more than was formerly earned on their lines; the 152 new trolley coaches are contributing a 20 per cent increase; and the 90 gas buses earn 6-7 per cent more than the old buses. The schedule speed of the system was 10 miles per hour and is now 12 miles.

During the last nine months, 140 trolley coaches were put in operation on 45.5 miles of route in Portland, Ore., increasing schedule speed 23 per cent and *decreasing accidents 12 per cent.* There were 1,664 trolley coaches in operation in 36 cities at the start of 1938.

New York's Standard Stock Catalog

THE diversity and huge volume of materials and supplies required merely to keep a city's machines in repair and producing, is shown impressively by the new Standard Stock Catalog compiled and now issued by the Department of Purchase of the city of New York. This catalog lists tens of thousands of items from acetphenetidin to zonite, under 79 classifications. Its purpose is to supply "information to all city departments so that the application and use of standardized articles can be adopted throughout the city government."

ONE OF THE 140 TROLLEY MACKS OF PORTLAND, ORE.

Though these articles are standardized in the sense that they are in routine use, considerable latitude is permitted the city departments in ordering, as to make, type and model. Obviously, if a better flashlight, pencil sharpener or duplicator is made available and is so well sold that department heads ask for that make or type, it will be added to the stock list of any city. This gives manufacturers an incentive to produce and promote new and improved products in each line. It gives the heads of the using departments a further incentive to keep abreast of these improvements.

Municipal Photography

CITIES are making increased use of photography, one of the more recent developments of which is in the field of traffic control. For instance, at Rochester, the camera city, eight municipal departments make special use of cameras. Two of the larger users are of course the Engineering and Police Departments. A. J. Chippendale, city photographer, who makes hundreds of views of construction jobs in progress and for use in workmen's compensation cases, emphasizes the present general acceptance of photographs as court evidence. In a recent instance, the camera revealed a fault in some extensive ceiling work, resulting in the placing of a new ceiling at once. The city photographer uses an 8 x 10 and a 5 x 7 Eastman View, and a 5 x 7 R.B. Graflex for fast work. An aerial photographic survey made for the city some years ago cost $16,000.

Police use of the camera is exactly the opposite of practice at Hollywood. After the shooting, burgling, or smash-up is over, the police photographer goes over the top for crime and wreck pictures; and when the bad actors are brought in he mugs them—at Rochester about 900 per year. Lieutenant William Winfield of Rochester uses view cameras, and Speed Graphics for crime scenes and in traffic safety work, a fingerprint camera for delicate clues, and a Century studio portrait camera and a Photorecord identification unit for mugging.

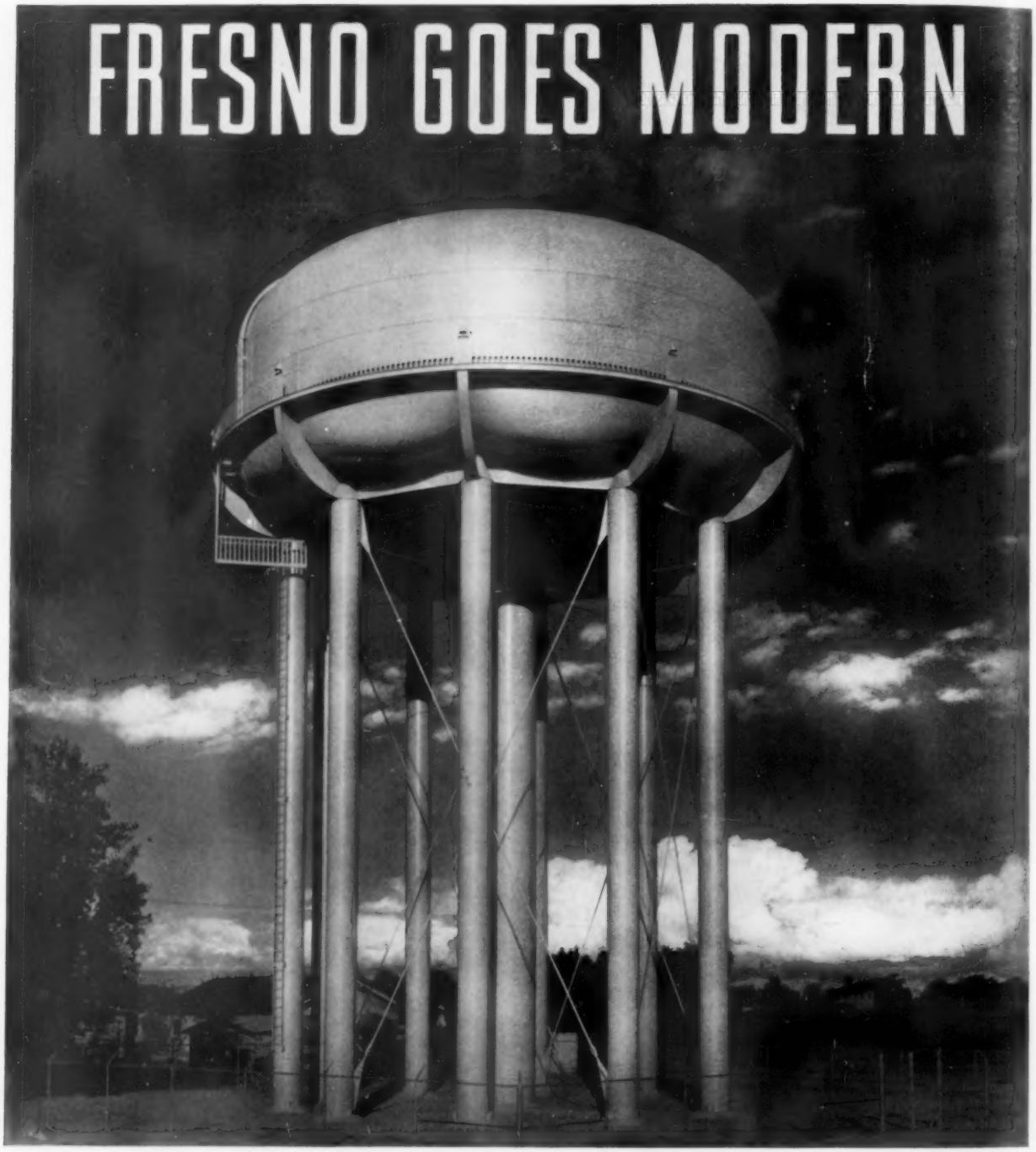
Two Photorecord cameras are finding increasing use—(1) for reducing to miniature film bulky records; and (2) for copying records of vital and other statistics on 35-millimeter film.

Cities are becoming increasingly aware of the value of the first-class publicity which photographs can furnish. Everybody likes to see pictures of other cities, and the more he sees, the less strange and remote these cities seem to him. A city that becomes well known through pictures is likely to be or to become a good city. It is in the limelight. The city-hall-operated camera can maintain a historical record of the municipality and aid the chamber of commerce and real estate board in adding to the popularity and fame of the community. The engineering and police cameras are as essential as the transit and radio car.

From Better to Best?

HAVE better communities resulted from the work of FERA, CWA, PWA? This work was essential in giving immediate employment; did it also produce local improvements which otherwise would not have been attained for many years? Having tasted the advantages of modern plant and methods, will hundreds of communities with or without Federal assistance continue modernizing until the entire municipal structure is even with progress? The community improvement appraisal being conducted from February 1 to March 8 by WPA and nine cooperating agencies including the U. S. Conference of Mayors and the American Society of Planning Officials, should answer these questions and furnish guidance.

FRESNO GOES MODERN



FRESNO, California, is proud of its record as a modern, progressive city and it is particularly proud of its new half-million gallon elevated water storage tank. As the picture above indicates, this new improvement is an up-to-date "Colonial" design with a radial-cone bottom.

Likewise, from an operating standpoint, the tank is typical of the most modern practices. It protects the city against interruption of service in case of temporary power or pump failure. It smooths out pressure fluctuations. And, because all of the water is held within a range of head of 25 ft., it was possible to cut pumping costs here as much as 11% compared with tanks of ordinary design. For complete information, address our nearest office.

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Cleveland.....2236 Rockefeller Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia..1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Liberty Bank Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Hunt Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Department Problems

The Removal of Fluoride from Water

WHEN the United States Public Health Service considered the problem of the removal of fluoride from drinking water, it appeared desirable to find a substance the use of which would not leave in the water any element or group not ordinarily present in appreciable quantity; and which, likewise, would not impair the potability of the water by increasing any ordinary constituent to an undesirable concentration. Although the field from which to choose was thus narrowed, three substances were found that appeared promising. These are tricalcium phosphate, magnesium oxide, and magnesium hydroxide.

The results obtained with tricalcium phosphate and with magnesium hydroxide were qualitatively similar to those obtained with magnesium oxide. Since, however, the question of cost is very important, and since, at present, magnesium oxide appears as the least expensive, experiments were conducted mostly with this substance. Calcined magnesite was quoted at about 3 cents per pound, or $60 per ton, and tricalcium phosphate at 6.5 cents per pound in the March, 1937, Market Report of *Industrial and Engineering Chemistry*. No comparable price on magnesium hydroxide was quoted. Light magnesium oxide complying with purity requirements of the United States Pharmacopoeia was quoted at 36 cents per pound.

It seems reasonable to expect that different grades of commercial magnesium oxide would show different degrees of fluoride-removing power. Preliminary experiments indicated that this is actually the case; and while it appears probable that a magnesium oxide could be prepared for this special purpose which would have a fluoride-removing power considerably above that of the ordinary commercial grades, it is questionable whether, from the point of view of cost, it might not be more economical to utilize a commercially inexpensive magnesium oxide even though its fluoride-removing power, is, per given weight, relatively lower.

The results reported in a paper by Elias Elvove, Senior Chemist, United States Public Health Service, in *Public Health Reports*, Volume 52, Number 38, were obtained with two different grades of magnesium oxide. A grade referred to as calcined magnesite was obtained from a business concern which uses it in the construction of cement floors. The other grade was a commercial sample of light magnesium oxide similar to that of the United States Pharmacopoeia. In both cases, the magnesium oxides were used in the finely-divided condition in which they are ordinarily sold. The laboratory experiments, which were carried on in tall bottles, indicate that fluoride can be removed from water with the aid of tricalcium phosphate, magnesium oxide, or magnesium hydroxide.

Although a commercial light magnesium oxide was found more efficient as a fluoride-remover, per given weight, than a commercial calcined magnesite, its greater efficiency was not proportional to its higher cost. From the point of view of economical operation, much work remains to be done. The report points out, however, that in the case of calcined magnesite particularly, since it is used extensively in building operations and for various other purposes, it may be possible to utilize the material after its availability for fluoride-removal has been exhausted and thus indirectly reduce the cost of the treatment. Such utilization would add another advantage to the advantages of its commercial availability in large quantities and comparatively low initial cost.

Overheating-Troubles

THE Central Service Bureau of the Hackensack Water Co., Weehawken, N. J., reports increasing trouble with overheating in domestic hot water systems in northeastern New Jersey. The Committee report points out that heating water by the use of waterbacks in furnaces creates hazards and costs more than it should, for this practice takes the control of water temperatures away from the householder and gives it to the weather, which is variable.

"A recent survey shows that in 210 instances overheated water was caused by the use in furnaces of oversized waterbacks which produced steaming conditions during very cold weather. The water was 50 to 100 degrees hotter than was required for domestic uses, and backed up into the cold-water pipes, in some cases ruining porcelain fixtures and in every case reported 'cooking' the water meter. No one wants to make a steam boiler out of a hot-water tank."

The report continues:

"Fuel used in thus overheating the water is wasted. It is not 'left-over heat from the furnace which costs nothing,' as is sometimes stated, but comes directly out of the coal pile or oil tank and hence out of the pocketbook.

"Tests at one of the leading scientific schools show that the average cost per family of heating (or overheating) water for household purposes by means of a waterback in the furnace firebox amounts to about $3 per month, or more, depending upon the outside temperatures.

"Oversize 'pot-stoves,' using coal for fuel, will, if forgotten or neglected, seriously and wastefully overheat water, according to the inspection reports on 121 cases noted in the last year and a half.

"The human element is in a majority of cases responsible for some of the serious instances of overheating. People who would never think of leaving an automobile parked for hours with the motor running frequently forget to close furnace or stove drafts, or go out leaving a gas water-heater burning. The results add thousands of dollars to the total annual fuel bills, and most of the heat is lost."

Water-Supply Sources

WATER-WORKS projects are job-site operations to the extent of from one-third to two-thirds of their costs. They involve buildings of the smaller type, foundations, bridges, tunnels, dredging and excavation, dams, and relocation of railroads and highways. About one-third of the total number of water-works projects develop surface water within the natural drains of the adjacent or contiguous lands; the other two-thirds tap the underground waters for relatively small supplies. In arid sections and in thickly populated areas supplies must be obtained from distances of as much as 100 miles or more, sometimes involving controversies and negotiations between two or more states.

—From a section on Water Supply, by MALCOLM PIRNIE, consulting engineer, New York City in the National Resources Committee report on "Technological Trends and National Policy."

More Water Revenue by Serving Neighbor

THE town of Cumberland, R. I., is laying a distribution line from its water works to the village of Albion, R. I., just across the Blackstone River in the town of Lincoln. Upon completion, the extension will bring a much-needed water supply to Albion and at the same time increase the revenue of the Cumberland system sufficiently to make it cover the carrying charges for both towns.

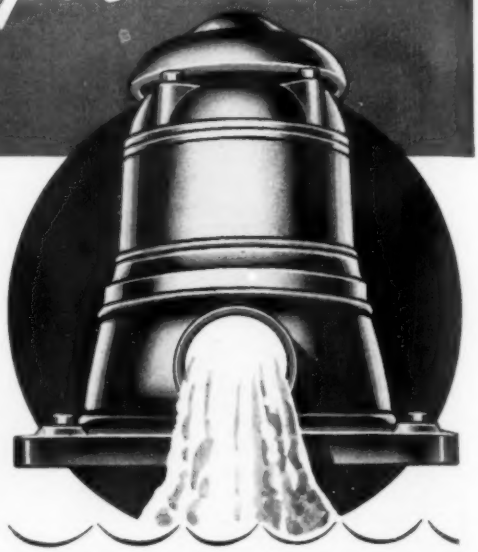
Cumberland's new water system, consisting of a large steel standpipe with the necessary pumps and a limited amount of distribution piping, had previously not been bringing in sufficient revenue to pay the carrying charges. The situation in Albion was also undesirable. Increased usage so far exceeded the reservoir capacity in Albion that the town had been threatened on two occasions by water famine.

Cumberland being the nearest source of supply, it was decided to extend its system to the village of Albion. After the necessary legislative action had been taken to permit Cumberland to operate in the town of Lincoln, a WPA project was set up to make the extension. Such an arrangement would not overtax the Cumberland water supply and would increase its revenue sufficiently to make it pay. At the same time, Albion will be aided with a constant and adequate water supply.

The project calls for the laying of an 8-inch pipe from the end of the existing line, a total distance of 9,000 feet. Transite pipe with sleeve and rubber gasket connections was installed by unskilled labor.

This Big Paper Mill

TOOK NO CHANCES ON WATER SUPPLY



Here is a specific case where the water supply system had to be highly efficient and dependable. With such requirements before them, the Designing Engineers of the Union Bag & Paper Corporation sought the assistance and knowledge of the Layne engineers, who suggested the design and entire ground water supply layout for their Savannah, Georgia, Plant. From beginning to completion all wells were drilled and equipped and all studies made as to the adequateness of the available supply by Layne men. All wells are specially lined with cement to meet the rigid demands of the City authorities, and are all equipped with Layne High Duty pumps. No plant in the world can boast of a finer ground water system nor one furnishing water more economically.

If your plans call for a new water system, or the modernization or enlarging of an old one, our engineers can provide much helpful advice and information. No obligation. Write for illustrated literature. LAYNE & BOWLER, INC., Dept. B, Memphis, Tenn.

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Snow Removal in Cities and Towns

TYPICAL SCENES IN HEAVY SNOW COUNTRY

We are indebted to International Harvester for these photographs of a TD-40 TracTracTor and Sargent V- and wing-plows opening and widening a road leading into a city so that rural business may get through to the trade center. To cities winter traffic means the continued flow of business, and to counties and states the continued flow of gas tax money into the road funds

Training Men for Snow Removal

THE cost of removing snow from the streets of a city the size of New York is a tremendous item. It has been reported as about $1,000,000 per inch of snowfall. The cost to the city as a whole does not stop at that point. If snow is left piled at the sides of streets and if narrow streets are blocked with ice and snow, business along these streets suffers immeasurably.

In 1935 New York City suffered from one of the worst combinations of sleet, snow, rain and a rapidly dropping temperature, resulting in a large proportion of the streets being covered with some 4 to 6 inches of ice for two or more months. Not wishing to rely on the city streets as the first test of the new equipment, Commissioner William F. Carey devised a remarkable plan of training. In a recent interview Commissioner Carey said:

"The city spends millions of dollars on this equipment and more millions to remove snow, but not a nickel that I know of on the training of men in actual snow conditions to handle machinery that is somewhat foreign to their experience. It is good business to train these men, and Lake Placid, which generally gets snow three weeks to a month before New York City, has been selected for this purpose. Thirty of our men at a time will go to Lake Placid, where each man will be given three days' work on snow removal. These men will be replaced by another 30, and so on until a total of 210 men have been trained. Mechanics from the companies that manufactured the snow apparatus will be on hand to instruct our men in every phase of operation. It is reported that this training will cost the city about $8,000."

The airport at Lake Placid was secured for the training ground. The men were housed in two boarding-houses nearby, where they had good food and good quarters.

Even veteran operators of snow-removal equipment who are unfamiliar with the newest types can make costly mistakes during heavy snowstorms. In the past there have been numerous cases where a large piece of equipment, such as a snow loader, would be put out of order for hours because of a trifling mechanical breakdown which probably could have been avoided or at best repaired on the spot if the men were acquainted with the machine.

Snow-Plowing—Emergency Service

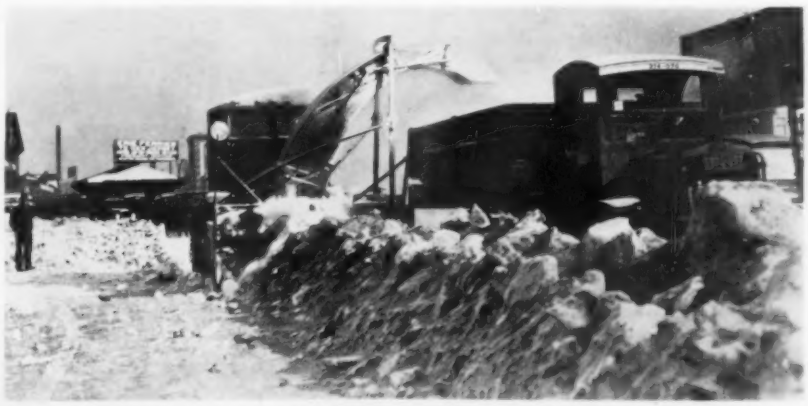
CITIES in the snow belt, where snow fighting has assumed almost the emergency stature of fire fighting, again are putting into effect their annual campaigns against winter's smothering white blanket. Business losses of millions of dollars, hazards to motor and pedestrian travel, and the crippling of fire, police and other emergency services, have aroused public demand to the point where cities have shown a gradual but steady development in snow-removal operations. The series of articles which are running in THE AMERICAN CITY show the methods which have been used by cities accustomed to heavy snows winter after winter.

The American Public Works Association, in announcing the preparation of a study on snow removal, states: "Economically, however, snow-removal service far beyond that now provided in most cities can be shown to be sound. If lost time and business inconveniences, vehicle losses and ill health caused by inadequate snow removal could be evaluated, the amount undoubtedly would be many times that expended on removal operations."

Since snow removal is distinctly of an emergency nature, careful planning for snow fighting must be made before the need for emergency action arises. Planning is regarded as essential if the program is really effective and if the most good is to be obtained for the money expended. This plan should include careful advance organization; arrangements for adequate personnel in the way of laborers, equipment operators, foremen, clerks, and timekeepers; equipment and supplies ready at day or night notice; and detailed operating procedures worked out on the mapping basis. One small detail ignored or forgotten may disrupt the entire operation.

Sometimes the street-cleaning organization is used as a skeleton around which the larger organization is developed, and the street-cleaning chief is usually the responsible official. Cincinnati has two organizations, one for light and average snows and the other for heavy snows. Some cities, such as Baltimore, use their own employees; others employ extra assistance, such as that provided by relief and welfare agencies. Railway and bus company activities in snow removal must be correlated with any city plan for that service. Of 68 cities reporting to the American Public Works Association on snow-plowing, for instance, the street-car and bus companies of 42 cities do the plowing or mechanical sweeping. Such companies load and haul snow in only 14 of the 68 cities responding to the inquiry.

The Rotary Now Works for Cities



A SNOGO ROTARY PLOW LOADING SNOW FROM A PLOWED WINDROW ON WEST STREET, NEW YORK, IN 1935

These Littleford Kettles have Double Heat Circulation

Littleford No. 84-HD

More of these fast trailing, fast heating, No. 84-HD Kettles are used for general road maintenance work than any other kettle. Double use of the heat from the burner provides you with a quicker draw-off of hot stuff from a cold start. You can heat more drums of road bitumen per day with less fuel. Less fire hazard than the average kettle. Equip the Littleford No. 84-HD with the Hand Spray Attachment and your crew will do more patching per day and do it better. Ask for full details on this kettle.

No. 78-OB Trail-O-Heater

This is just the kettle for maintenance crews covering long mileages from their bases of supply. Its heavy-duty firebox steel melting tank holds 300 gallons (6 drums) and the warming hood holds an extra drum—enough for a whole day's run. Equip this No. 78-OB with a Littleford Motor Spray Attachment and your crew is ready to do a real, big-time job of road maintenance. "Double Heat Circulation" in this kettle saves your men time and cuts your fuel cost.

No. 83, The Construction Kettle

This big four-wheeler is the answer wherever you need large quantities of hot stuff frequently, all day long. Exactly the unit you need for construction gangs. A veritable heating plant on wheels. Full turning, oscillating front axle makes it easy to handle in traffic or in cramped quarters. Twin powerful burners, insulated shell, and a low loading height add to this kettle's heating speed and operating convenience. Your choice of 300 or 550 gallons capacity.

BLACK TOP ROAD MAINTENANCE EQUIPMENT — LB — SINCE - 1900

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Send for Bulletin M-1

Find out what true, patented, Littleford "Double Heat Circulation" means to you in the matter of hours saved and in dollars and cents. Ask for Bulletin M-1 giving these facts. Only Littleford kettles have true "Double Heat Circulation."

When you write for that catalog, kindly mention THE AMERICAN CITY.

Brick Paving, Sidewalks and Bridges

The Maintenance of Sidewalks

THERE are 200 miles of portland cement concrete sidewalks within the limits of the streets of Oak Park, Ill. To insure that these sidewalks are safe at all times, inspections are made from time to time, and wherever a defective sidewalk is found in front of private property, the adjacent property owners are notified to make repairs. Sidewalks between the property line and curbing at street intersections are repaired by the Street Department, as well as all sidewalks which have been damaged by roots of parkway trees.

In a number of instances where trees were removed, sidewalks were damaged during the removal. In these places the sidewalks were replaced or repaired by the village. The total amount of sidewalks repaired or replaced in 1936 was 615 linear feet at 56 locations, at a total cost of $359.85. There are still several thousand feet of defective and broken sidewalk which should be replaced with new sidewalk. This will be done as rapidly as possible.

C. A. WALLS,
Commissioner of Public Works.

Street Paving in St. Petersburg, Fla.

THERE are 300 miles of paved streets in St. Petersburg, Fla., of which 205 miles are brick. An additional 46 miles has been surface-treated and metaled. The first brick pavements were laid about thirty years ago and are still in service with practically no signs of wear. The first paving brick were laid on the natural sandy soil with sand filler, and the majority of brick pavements in service today in St. Petersburg are of this type. In recent years more substantial construction has prevailed. The base course used today, composed of a shell formation pumped from the bay and consolidated by rolling, makes an excellent foundation. The joint filler is asphalt.

On Central Avenue, which divides the city into north and south sections, between 6th and 9th Streets, is a brick pavement which is claimed to be the first in which the brick were laid flatwise in accordance with present-day general practice. This street was paved in 1910, and the brick were 3 x 4 x 8½-inch repressed brick laid the 3-inch depth.

Like many other cities, St. Petersburg has taken advantage of the availability of Federal relief funds in the construction of needed street improvements. A recent project in the WPA program is the widening of the old 20-foot pavement on 4th Street South to 40 feet. All the old brick were reclaimed and relaid, and new 2½-inch lug brick were used for the widening, all on a new shell base. First Avenue South has also been paved with 2½-inch lug brick on a new shell base with asphalt filler removed from the surface.

New Practice in Rolling Brick

THE usual specification in brick paving procedure provides that, after the brick has been laid and has passed inspection, the pavement shall be rolled in a prescribed manner with a self-propelled roller weighing not less than 3 nor more than 5 tons. Rolling on boards is a recent innovation that originated in Richmond, Va., and is meeting with increasing favor elsewhere. It was used in the recently constructed brick pavement in the Lincoln Tunnel under the Hudson River at New York City. It has the advantage of permitting the use of heavier rollers such as most contractors have on hand for sheet asphalt construction. The brick are uniformly embedded vertically, with the minimum displacement laterally. The joint line remains straight, which is desirable from the standpoint of appearance.

Following is the requirement quoted from the Richmond, Va., specifications:

"After the bricks have been laid, the lines straightened, the surface swept free of chips and the work approved by the inspector, the brick shall be rolled with a power-driven tandem roller weighing not less than 5 nor more than 10 tons. Rolling shall be done longitudinally *on boards* not less than 10 inches wide and 12 feet long, dressed to a uniform thickness of 13/16 inches, laid longitudinally and in close contact. Rolling shall start at one curb of the street. The roller shall not progress more than 10 inches transversely at each longitudinal roll. Sufficient boards will be required for longitudinal rolling of 24 feet. Boards which become split or broken shall be replaced."

Rigid Frame Bridges Used Increasingly

STEEL rigid frames are effecting a new economy and a new sense of esthetics in bridge design. The acclaim for this type of bridge is due mainly to the fact that it has been found possible to make a small utilitarian bridge a thing of beauty. The rigid frame design, however, has its additional application in the construction of hangars and auditoriums where great clearances are needed free of supports.

The economy of the rigid-frame design was illustrated especially in the covering of the New York Central Railroad tracks on Riverside Drive, New York City. That job would probably have been too costly without steel rigid frames which eliminated what would otherwise have been an expensive foundation and thick retaining walls.

The most economical design of a rigid-frame bridge, considering the earth fills, masonry abutments and steel span as a whole, is usually determined by making the steel span as shallow as possible. This results in a saving in the volume of masonry in the abutments and in the length and volume of fills, when compared with a deeper span. This saving, in many cases, when translated into cost, more than offsets the cost of the additional steel required because of the shallow depth. The maximum length of span of steel rigid-frame bridges that can be built with economy is indefinite. Spans longer than 100 feet have been built.

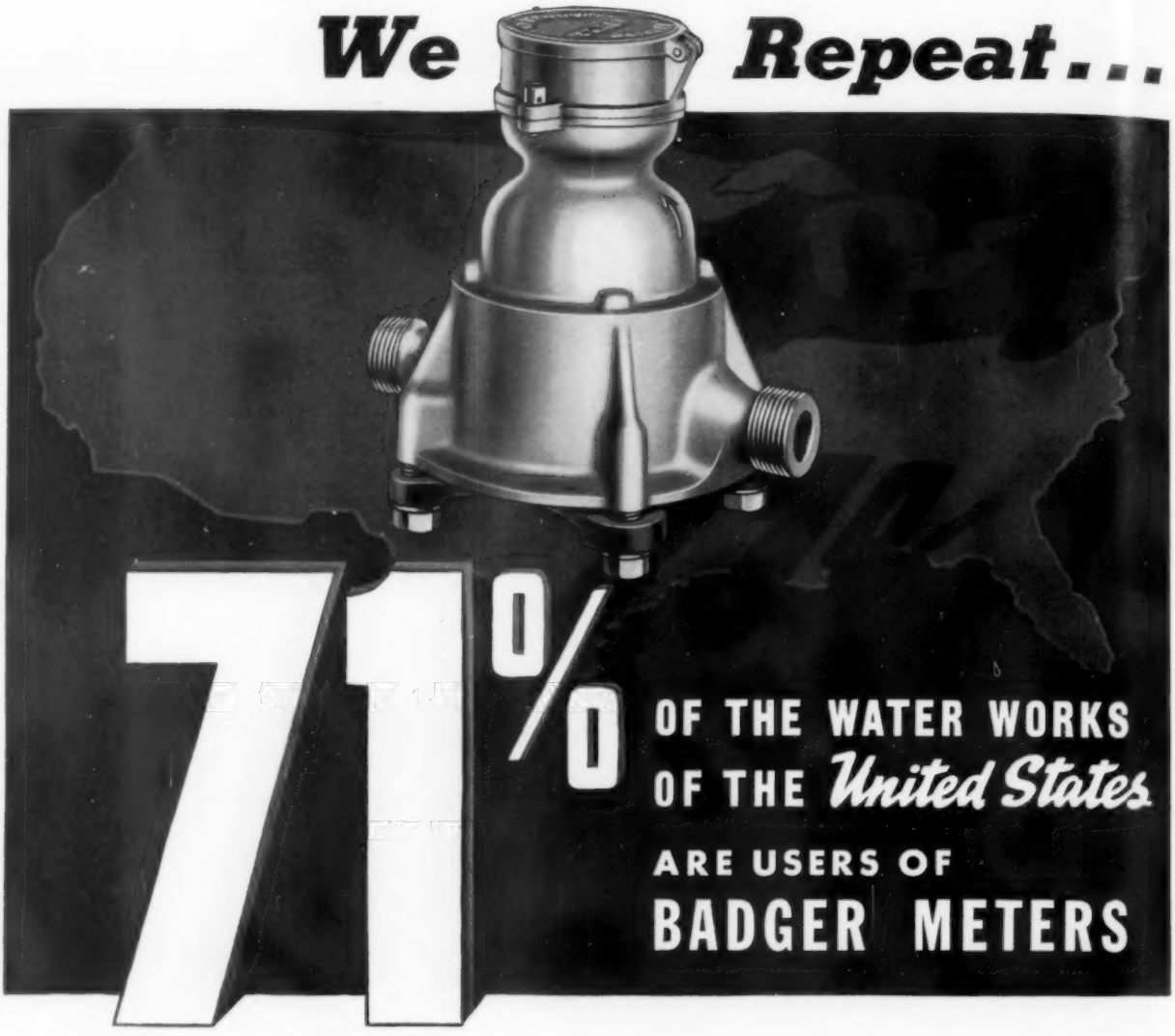
—From a paper by HAROLD D. HUSSEY, Designing Engineer, American Bridge Co., presented at the fifteenth annual convention of the American Institute of Steel Construction. Copies of this paper are available in pamphlet form from the American Institute of Steel Construction, 200 Madison Avenue, New York.

Reinforcing Rods in Brick Pavement

REINFORCING brick masonry by embedding steel rods in the mortar joints has for some years been a practice in building construction that has received increased recognition and utilization. The slab strength developed in reinforced structural brick masonry pointed to the possibility of this type for pavement slabs and in 1931 led to an installation in the driveway of a brick plant in Illinois. Brick were placed in a "basket-weave" manner, with three brick constituting a unit. Reinforcement of ⅜-inch round deformed bars was placed at 8¾-inch centers both ways, 1 inch from the bottom, and all joints filled with 1:2 cement mortar. Two weeks after the slab was completed, an excavation was made under one side, creating a clear span of 5 feet. It is estimated that during the past six years 25,000,000 paving brick have been trucked over the pavement, which shows no signs of distress.

Based on the success of this experiment, an additional test section 38 feet wide by 75 feet long was installed on West Grand Avenue, in Springfield, Ill., in September, 1937. Instead of using standard paving brick in basket-weave pattern, large vitrified units ½ x 8 x 8 inches were manufactured. They were laid by hand in checkerboard pattern, properly spaced, and reinforcing rods were placed in two directions in the cement-grouted joints. Transverse expansion joints will be necessary in a long project, although volume change due to thermal expansion and moisture will be less than for concrete. The Ohio Highway Department and the National Paving Brick Association are planning another test installation in Ohio. A base course of the stabilized type will be used under some of the sections. This type of pavement will not require curbs or headers on the sides, and it is estimated that it will be less expensive than the usual design. However, according to the National Paving Brick Association, it should now be considered as having only an experimental status.

We Repeat...



More than five billions of dollars are invested in the nation's water works facilities . . . to provide for an average daily per capita consumption of water in the United States of 100 gallons.

And 71% of the most important systems have purchased Badger Meters for their known dependability and economy of performance. Such amazing majority of acceptance of Badger Meters has been won because Badger Meters deliver service. They take little "time out" for inspection and repairs . . . they emphasize economy of operation . . . they produce maximum revenue by accurate operation. The smallest trickle or maximum capacity flow is faithfully recorded by Badger Disc Meters . . . which have the largest capacities, size for size, with the least absorption of pressure.

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Badger Meters on your lines assure Durability . . . Large Capacity . . . Extreme Accuracy . . . Minimum Maintenance . . . Low Pressure Absorption.

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Health-Department Problems

Typhoid Fever in New York City

THE Annual Report of the Department of Health in New York City for 1937 shows that typhoid fever is definitely on its way out. With but 50 deaths and with less than 350 cases occurring in the city in each of the last four years, New York medical schools find it difficult to secure cases which the medical student and interne can observe and study. Approximately two per cent of the ninety per cent who recover from typhoid fever, subsequently continue to harbor typhoid bacilli in their excreta. These individuals are spoken of as "carriers." With the continued reduction in the number of new cases, the number of new carriers becomes markedly less from year to year. At present the Department of Health has 385 typhoid carriers under supervision. They report to the Department twice a year and are given instructions regarding the precautions to be taken in order to prevent the infection of others. They are not permitted to engage in food-handling occupations.

Thanks to the sanitary supervision and chlorination of the municipal water supply, and the pasteurization of all milk sold in the city, New York has had no water-borne or milk-borne outbreaks of typhoid fever during the past quarter-century. The visitor to New York City may come feeling confident that he runs no risk of contracting typhoid fever.

The city's typhoid experience since 1910 is shown in the following table. In 1937 mortality rate was the lowest ever recorded in the city.

CITY OF NEW YORK. TYPHOID FEVER CASES AND DEATHS, 1930-1937 INCLUSIVE

Year	Cases	Deaths	Death Rate per 100,000
1910-19 (average)...	2,262	339	6.8
1920-29 (average)...	958	126	2.0
1930.....	497	62	0.9
1931.....	603	77	1.1
1932.....	560	64	0.9
1933.....	557	70	1.0
1934.....	378	44	0.6
1935.....	349	34	0.5
1936.....	343	33	0.4
1937.....	271	26	0.3

Typhoid Outbreak Caused by Temporary Carrier

A RECENT issue of *Public Health Reports* of the U. S. Public Health Service contains an interesting epidemiological report of Dr. John L. Lavan, Health Officer, Grand Rapids, Mich., on an outbreak of typhoid fever in Grand Rapids which was traced to the eating of cream puffs from a bakery in which a temporary carrier of typhoid fever was discovered. Between December 9, 1936 and January 4, 1937, nine cases of typhoid fever were reported in the city, four cases in nearby territory and at least one case in a town 21 miles distant. In the latter case the patient reported that she had eaten cream puffs from the bakery in which the carrier was found.

Dr. Lavan states that the city had been remarkably free from typhoid fever for the previous five or six years and that an epidemiological investigation was begun immediately after the first cases were reported. The occurrence of several cases within a period of two weeks pointed to a common origin. The milk used by the patients was found to have been supplied by five different dairies, although in the case of two dairies two patients were taking milk from the same dairy, and one other dairy had supplied three of the patients. All the dairies had pasteurizing plants, and none sold raw milk. The results of the investigations of the pasteurizing methods and personnel were negative. The water supply was also found to be entirely safe.

After eliminating the milk and water supplies, attention was turned to other possible common sources of infection, and it was found that all the patients in the city and some in the country had patronized the same bakery, and that each of them had eaten cream puffs purchased from that bakery. All the bakery employees, some 250 in number, were examined, their past history with reference to typhoid was obtained, cultures were made from stool samples, and the sanitary methods of certain employees were investigated. Cultures of stool specimens were made daily on the employees under suspicion, and on the seventh day a positive culture was obtained from an individual employed in filling the cream puffs with custard and with cream. Suspicion had been centered on this part of the industry early in the investigation, and production had been curtailed before finding the carrier.

The carrier is evidently of the temporary or sporadic type, as the organisms were not found to be present continuously in the stools, and she was without clinical history of having had the disease.

Mosquito Control in Oakland, Calif.

THE Alameda County Mosquito Abatement District, with offices in Oakland, Calif., is divided into three separate divisions, with a foreman in charge of each under the direction and supervision of Harold F. Gray, Engineer of the District. One of the divisions is entirely urban and includes the cities of Oakland, Berkeley, Emeryville, Piedmont, San Leandro and Alameda. In these cities there are approximately 10,000 sewer catch-basins, about 4,000 underground street vaults of the Pacific Gas & Electric Co., the Pacific Telephone & Telegraph Co., the Postal Telegraph Co., the Western Union Telegraph Co., and the Southern Pacific Co. About 70 per cent of these catch-basins and vaults breed mosquitoes throughout a great part of the year; in fact, breeding never ceases.

Several methods of handling this problem have been tried. The first experiment, with a truck, a driver and two men with two 3½-gallon cylinder spray tanks, was successful but too slow and expensive. The second experiment used a truck, a driver and one man with a 55-gallon drum containing oil under air pressure. This proved much faster and cheaper, but was still too expensive and hence was abandoned. The third experiment began in 1935 after considerable study which finally resulted in a 3-wheel motorcycle outfit, which oils sewer inlets and catch-basins far more rapidly and cheaply than had been previously possible.

A Harley-Davidson type GD Servi-Car was purchased and a special pressure oiling outfit mounted in the rear compartments. The equipment consists of a welded steel tank 18 inches in diameter and 32 inches in length, tested to 100 pounds per square inch pressure, and operating at 50 pounds per square inch maximum pressure. The tank has about 32 gallons capacity. The gross weight of the equipment alone is 1,200 pounds. This equipment, with one man, can oil from 25 to 50 per cent more catch-basins per day than an automobile truck with two men at a lower cost per mile.

An average of 46 miles is traveled per day. The driver inspects an average of 250 catch-basins per day, of which he finds it necessary to oil an average of 168. Experience in this division shows that the motorcycle goes 19 miles per gallon of gasoline and 110 miles per quart of lubricating oil. The cost of motorcycle operation alone per mile is $0.0122. This cost does not include depreciation, insurance, tires, interest on the investment nor major repairs and overhauls. The equipment travels approximately 7,500 miles per year in eight months' operation. Including insurance, major repairs and overhauls, and interest on the investment at 4 per cent, the expense of this outfit amounts roughly to 5 cents per mile, according to A. H. Miles, District Foreman.

Lost Birth and Death Certificates

THE experience of the 1937 flood in the Ohio and Mississippi Valleys, which jeopardized, if it did not destroy, records of births and deaths in the city of Louisville and the state of Kentucky, should stimulate serious thought on the part of all who are interested in the preservation of such records.

One course of action to insure against fire and flood would be to construct steel fireproof and waterproof vaults. Another possible method would be to take microfilm transcriptions of all birth, death, and still-birth certificates, and place such films in the Archives Buildings of the state and of the United States.

ELEMENTS of PUBLIC SAFETY

GAMEWELL

THREE-FOLD FIRE ALARM BOX

Not more than 500 feet to the nearest box in closely-built residential districts . . . convenient to every group of buildings, manufacturing establishments, and institutions in sparsely-built districts . . . in congested high-value districts—"*A Box a Block*" — with special attention to Life Hazards . . . a safe rule to follow.

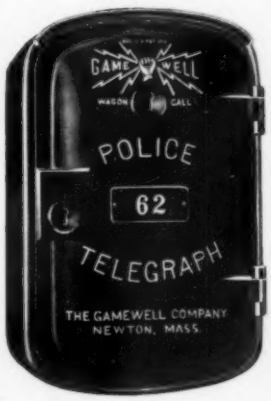
TIME— THE VITAL ELEMENT

Low fire losses do not always indicate the absence of fire hazards. Fires occur in every community and where the means for fire control are efficient and have been so effectively used as to limit the losses to low figures, the community is to be congratulated. But, it should be remembered that the difference between a low and an excessively high per capita fire loss frequently consists of but one or a few large fires. In such cases, there is almost invariably a story of delay in bringing to bear the available fire extinguishing resources.

The function of the fire alarm system is to save time when fire is destroying property. Fire Alarm Boxes adequately distributed and accessible to all citizens provide the means for eliminating delay.

Reliable fire alarm systems are essential to the protection of Life, Property and Business.

EXEMPLAR POLICE BOX



Police Signal Systems provide . . . adequate patrol of policed areas . . . secrecy in police communications . . . prompt assistance in emergencies . . . direct connection with police department for banks, commercial establishments and residences . . . the basic element in communications . . . enabling the police forces to attain the highest degree of operating efficiency.

Write for descriptive literature.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS MASSACHUSETTS

Public Safety

Inter-City Network Growing on Municipal Cooperation

TODAY we have an inter-city radio telegraph net that covers half of the United States and more than half of its population. Through this means we can dispatch complete messages of police emergencies that will adequately describe wanted persons and stolen property. Through the employment of radio we can cut off the escape of a criminal.

Successful tests have been carried out each evening with the Police Department of Havana, Cuba, leading to regular schedules. Any part of the island can be reached through the Cuban network. Similar tests will soon be carried on with Mexico City by special permission of the Federal Communications Commission.

The Communications Directory of the Associated Police Communication Officers, as published recently, is fine evidence of the growth of the inter-city system of police communication. Thousands of dollars' worth of recovered property is to the credit of this system. It is looked upon in much the same light today as the effective use of local police-radio communication between headquarters and patrolling cars. Back of it all, the radio men have asked for and received the support of their municipal governments. Their combined efforts have enabled the communication officers to build the radio telegraph network to its present size. Increased interest in other municipalities not now using the system will, in time, make its use universal.

MAURICE B. O'NEIL,
President, Associated Police, Communications Officers, New Orleans, La.

F. C. C. Allocates High Frequencies for Police Radio Service

THE allocation of frequencies between 30,000 and 40,000 kilocycles provides 29 frequencies for assignment to the police service. Of these frequencies, 25 will be available to municipal and county government, and 4 to state police agencies. The frequencies will be assigned on a shared-use basis. This plan will take into consideration important factors such as geographical separation, maximum power employed, number of mobile units operated in conjunction with a fixed station, area to be served, and other important considerations.

It is contemplated that one group of frequencies will be assigned to fixed stations of relatively large power outputs, and another group to those fixed stations employing lesser powers. A third group will be available exclusively for mobile units.

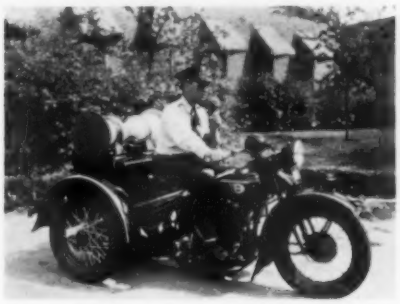
As in the past, it will be necessary that contiguous municipal and county governments serving the same or adjacent areas cooperate to the fullest extent and coordinate their needs for radio communication service.

Sound-Equipped Safety Cycles

IN working traffic efficiently and educating the public in becoming safety-minded, we have had very good success with the Safety Cycle, as we call it, shown in the accompanying photograph. We have two of these Servi-cars equipped with public-address systems. This unit is of course flexible and comparatively inexpensive.

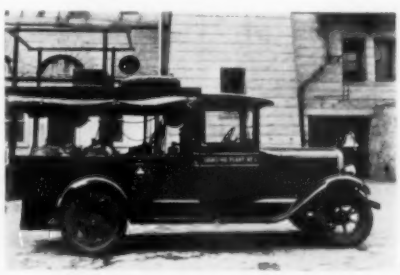
The amplifier used is a Webster-Mobile 25-watt public-address unit. The phonograph turn-table equipment was discarded owing to lack of space, and a pre-amplifier stage was built into the amplifier to enable us to use a crystal mike instead of the standard equipment carbon mike. The only trouble experienced was audio feedback due to the closeness of the mike to the speakers, this being overcome by using a highly directional crystal mike and close talking. The quality is very good and easily understandable by both pedestrians and motorists.

The usual practice in this kind of work is for the Safety Cycle to be parked on a thoroughfare or busy intersection and as a motorist or pedestrian breaks one of the "Safety Rules of the Road" the officer in the car will call that fact to the individual's attention and caution him courteously.



A SAFETY CYCLE OF LINCOLN, NEBR.
Officers drive two of these compact three-wheel Harley-Davidsons, equipped with public address systems, around the streets of Lincoln, warning motorists and pedestrians of traffic violations. Officer Harold Knadle is in the saddle and at the mike of the above Servi-car

WALTER ANDERSON,
Chief, Police Department, Lincoln, Nebr.



FOR SEEING THINGS AT NIGHT
One of the two mobile lighting plants of the Boston Fire Department, installed in 1928-29, each equipped with two cast-aluminum floods for 750- or 1,000-watt lamps and for 500-watt lamps. These G. M. trucks with G. E. lighting equipment are included in Fire Commissioner Edward F. McLaughlin's listing of his major pieces of apparatus on pages 57 and 58 of the December issue

Motorcycles Form "Bottleneck"

NIGHTLY in San Diego, Calif., squads of eight motorcycles each are sent to various parts of the city to watch for intoxicated drivers. Every motor vehicle approaching an intersection is halted and the driver inspected by the officers, and any drivers showing signs of intoxication are taken to the curb for intensive examination. In six months these measures sent 339 motorists to jail, with a monthly high of 80 in March and a minimum of 48 in June. Traffic deaths have decreased.

GEORGE M. SEARS,
Chief, Police Department, San Diego, Calif.

A Crime Course for Police

A TWO-WEEKS course in scientific crime detection, beginning January 17, followed the work in traffic safety control recently offered at the Rutgers University Bureau of Public Safety. It was open to detectives, ranking police officers and others who have a direct responsibility for crime control in New Jersey communities. Laboratory studies and lectures on types of evidence, toxicology, fingerprint identification, photography of crime scenes, identification of documents, recording and charting of crime-scene rooms, blood stains, firearms identification, and chemistry as it relates to crime detection, were some of the subjects.

WMPR

REVERE, MASS., 40,000 population, has installed a Gamewell-Westinghouse two-way police-radio system with 50-watt medium high-frequency transmitter. The call is WMPR.

For Prompt Quenching

PAWTUCKET, R. I., has replaced a 1917 ladder truck, ordered a 750-gallon enclosed pumping engine, and is completing a new $200,000 Gamewell fire-alarm system including a loudspeaker system and 92 newly-located boxes, which, says Chief Napoleon Taupier, "covers our territory very well."

HOW CHARLESTON'S NEW 18½-MILE TUNNEL WAS STERILIZED

CHARLESTON'S NEW TUNNEL TO THE EDISTO RIVER WAS BUILT THROUGH MARL FORMATION. NO LINING WAS USED.

JAMES E. GIBSON, Manager and Engineer of the Charleston, S. C., Water Department who had charge of the entire tunnel undertaking—the man who made Charleston's dream come true.

A JOB THAT CALLED FOR HTH

CHARLESTON citizens gasped when three far-sighted engineers proposed a tunnel to the Edisto River for the city's water supply. But that was back in 1853. A few months ago the last 18½ miles of that "impossible" 23-mile tunnel were sterilized and put in service; a 75-year old dream had become a reality.

How Charleston's own Water Department, under the generalship of James E. Gibson, built 23 miles of unlined tunnel through marl formation is a story of unusual engineering accomplishment. No innovation, however, was the well-tested method of sterilization selected for the completed tunnel.

"We gave the matter careful thought," writes Mr. Gibson, "and finally reached the conclusion that the use of High Test Hypochlorite was the most feasible and practical method of securing the desired results. We accordingly purchased from The Mathieson Alkali Works (Inc.) 500 pounds of High Test Hypochlorite."

Mr. Gibson then goes on to describe how the tunnel was sterilized, how the easily-transported hypochlorite was introduced in the tunnel at different points, how the water was first admitted from the Edisto River and then from Goose Creek and finally washed out into the Ashley River through the outfall gates at Shaft No. 12. Commenting upon the effectiveness of the sterilization, Mr. Gibson states that "bacteriological tests of the discharge from the shaft through the tunnel compared favorably with tests of the raw water in the river at the intake."

Water works men aren't often faced with the task of sterilizing such a stretch of tunnel. But Mr. Gibson's experience is typical of that of hundreds of others who have found HTH indispensable for all manner of special and emergency chlorination jobs, from treatment of an isolated well to chlorination of an entire reservoir.

Scores of just such unusual jobs, as well as many routine jobs, are discussed in detail in "Hypo-Chlorination of Water," an 80-page manual of practical information for water works officials. Send now for a copy of the new third edition.

The MATHIESON ALKALI WORKS (Inc.)
60 East 42nd Street New York, N. Y.

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Dry Ice (Carbon Dioxide Ice)

MAP SHOWING LOCATION OF TUNNEL AND ITS RELATION TO THE CHARLESTON PUMPING STATION, THE EDISTO RIVER AND THE ASHLEY RIVER

FEBRUARY, 1938

Vol. LIII, No. 2

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

The Columbus Waterfront, Before and After

(See front cover and page 30 of this issue)

The Columbus Civic Center

(See preceding page and front cover of this issue)

By JAMES V. SKAATES

A FLOOD, 25 years and $25,000,000.

Those three elements combined to produce in the heart of Columbus one of America's most beautiful civic center developments.

In 1913 the banks of the Scioto River, which flows through the city within three blocks of the State Capitol and the city's main intersection, were a public eyesore. Ramshackle buildings of small manufacturing concerns, clapboard dwellings of the laborers, heaps of ashes and rubbish, bordered the river. The channel itself was choked with débris deposited there by innumerable seasons of high water.

While the main business section of Columbus was on a high plateau on the river's east bank, the entire "west side" was in constant danger of floods, protected only by earthen levees. The flood which did arrive in the spring of 1913 took 89 lives, ripped out and destroyed four of the five iron bridges across the river, and caused immense property damage.

Then Columbus awoke.

"It must not happen again," was the resolve of the City Administration, the Columbus Chamber of Commerce, newspapers, luncheon clubs, trade associations, merchants and citizens. Consulting engineers were called in, to make an exhaustive study of the situation. They submitted a flood-control plan to the City Council. Funds for carrying out all the recommendations were not immediately available, but some of the work was started at once.

Many old properties along the river banks were acquired by the city through condemnation. The river channel was dredged and widened from 300 feet to between 600 and 700 feet. Construction of new bridges began in 1917, but the war interfered and they were not completed until 1920.

More land was purchased for construction of a new City Hall on the east side of the river. The Columbus Board of Education bought 18 acres on the west side of the river, and began construction of a new Central High School.

As a further aid in controlling high waters, O'Shaughnessy Dam was built in the river, 14 miles north of the city, creating a reservoir which now holds 5,400,000,000 gallons of water. A smaller dam, Griggs, storing 1,200,000,000 gallons, already was in use. Besides aiding in flood control, the two reservoirs assure the city of an adequate supply of water during the most severe drouth.

After the Central High School and the City Hall, came the Safety Building, just a block from the river, at Gay and Water Streets. It houses a modern city prison, municipal and traffic court rooms, police and fire department headquarters.

Meanwhile state offices were crowded into several widely separated buildings, at high rentals. Governor Myers Y. Cooper led the movement for a new State Office Building, and land was acquired along the river's east bank between Broad and Town Streets. The beautiful new building was completed in 1931.

The next building on the list was the Columbus Auditorium, at Town and High Streets, half a block from the river.

The Federal Government purchased a site on the riverfront and added a Federal Building, containing the Post Office and other Federal offices, to the riverfront scene.

Towering over all, rearing its 44 stories higher than the Washington Monument, is the AIU Building, constructed by the American Insurance Union at a cost of $7,500,000. Since this edifice is only a block and a half from the river, and directly across Front Street from City Hall, it too is considered a part of the civic center.

Columbus isn't through building. There is talk of building a new Franklin County Courthouse. And prominent Masons occasionally discuss thoughts for a new Masonic Temple.

When the time arrives for these plans to mature, considerable pressure undoubtedly will gather behind the suggestion: "Why not make them a part of Columbus' beautiful civic center?"

Where State Governments Get Their Revenues

FROM a compilation by the Tax Policy League of state tax yields, the following tabulation has been prepared. From most of the states the League secured, in advance of regular publication, figures for the fiscal year ended June 30, 1937. Where such figures were not furnished, the latest available figures for a prior year were used.

The statistics cover taxes for state expenditures only, and do not include funds raised and spent by counties, municipalities, school districts and other political subdivisions of the state. In the case of subventions and shared taxes, the former have been considered state expenditures and the latter local expenditures.

Tax	*Percentage of Total*	*Yield*
Gasoline	25.61	$704,920,691
Gross receipts, gross income and sales	15.06	414,593,637
Income (net)	13.10	360,518,753
Motor vehicle	11.39	313,462,175
Property	7.96	219,242,320
Alcoholic beverages	6.90	189,826,787
Inheritance, estate and gift	3.98	109,530,808
Special taxes on insurance companies	3.17	87,162,447
Special taxes on utilities	2.88	79,271,608
License	2.28	62,652,161
Tobacco	1.71	46,954,761
Severance	1.59	43,818,506
Stock transfer, etc.	1.52	41,821,604
Franchise	1.49	41,145,207
Special taxes on banks	.42	11,431,851
Admissions	.31	8,433,102
Miscellaneous	.21	5,781,550
Chain store	.18	5,045,943
Poll	.14	3,822,642
Soft drinks	.12	3,217,538
Oleomargarine	.01	301,759
Total		$2,752,955,850

Detailed figures for the various states are reported in *Tax Policy* (309 East 34th Street, New York) for November-December, 1937 (52 pages, mimeographed, $1), with supplementary and percentage figures in *Tax Policy* for January, 1938 (23 pages, 25 cents).

The Dayton Airport Completed

Commercial Night Flights Marked Final Installation of Lighting on September 1, 1937

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

WITH the completion of all lighting facilities to the satisfaction of the Department of Commerce and to the commercial air transport companies, the first regular commercial night landing and take-off took place September 1, 1937, at the Dayton, Ohio, Municipal Airport, located nine miles north of the center of the city on a paved highway. A private field had been operated at the site for some time when public-spirited citizens acquired the field with additional acreage doubling its size to 311 acres, and providing the city with the basis for a modern all-weather airport. The city hastened to complete the port, which was delivered to it as a large field without paved runways, on April 29, 1936. An application to WPA was approved and work started immediately. The job saw its fulfillment on September 1, 1937, except that about $190,000 additional funds are needed for the construction of a suitable administration building and a north-and-south runway.

AN EASTBOUND TWA PLANE TAXIING UP TO UNLOAD PASSENGERS AT THE DAYTON, OHIO, AIRPORT

Runways and Drainage

The field is roughly rectangular, with a notch in the southwest corner where the area is not needed. In the center of the triangle formed by the runways a cut of about 3 feet was necessary to make the field level for the satisfactory completion of the runways.

To complete the three runways that are needed for the successful all-weather operation of the port, a total of 140,000 square yards of concrete pavement was laid. A taxiway 60 feet wide connects the three runways at the east end of the field, and in addition an apron has been laid around the two hangars.

The principal runway runs from northeast to southwest and is the prevailing-wind runway, No. 2. It is 3,400 feet long and 100 feet wide. The second runway, No. 1, runs from east to west and is 4,000 feet long and 100 feet wide. The third, No. 3, running from northwest to southeast, is 3,400 feet long and 100 feet wide. Each runway is composed of five 20-foot concrete slabs with tongue-and-groove joints between the adjacent slabs to prevent uneven settlement. Each 20-foot slab is 5 inches thick for the center 15 feet, and then thickens uniformly in the outer 2½ feet to 7 inches at the edges.

There is no longitudinal expansion joint, but a center slot 2 inches deep and ¼-inch wide through the center of the 20-foot strips is poured with asphalt and acts as a dummy joint. Across this joint are ½-inch round dowels 30 inches long at 4-foot intervals, to bond the two parts of the 20-foot slab. The transverse joints consist of 1-inch premolded expansion joints every 100 feet, and dummy joints 2 inches deep and ¼-inch wide every 20 feet. Dowels of ¾-inch round bars 2 feet long placed on 1-foot centers, capped on one end and painted and oiled, were run through the expansion joints. There is also one dowel at each end of each transverse dummy joint. These are ¾-inch round bars 3 feet long.

The runways are built with inverted crown so that the drainage is to the center instead of to the edges. This has several advantages. It saves in the cost of the drainage system and also prevents the softening of the turf at the edges of the runway by water draining off the surface. The inverted crown is only 5 inches in 100 feet, so that it has no effect on the handling of the planes when landing, taking off or taxiing. The manholes for the drains are placed at intervals of approximately 150 feet and are 24 inches in diameter with slotted cast iron covers. They open into concrete boxes or catch-basins with 10-inch concrete tile pipe running to a manhole 28 feet outside the runway on one side. The side drain pipe varies from 15 to 24 inches diameter, with the smaller sizes of vitrified tile and the larger of concrete. On the other side, drainage is taken care of by a separate line of 6- and 8-inch vitrified tile also 28 feet from the runway, tapped at convenient points to the main drains. The trench over the laterals is filled to within 6 inches of the surface with gravel and topped with soil. This keeps the ground water from getting under the runway slab. The reason for placing the drains 28 feet on either side of the runways is that it allows for widening the runways 25 feet on either side and still leaves the trench clear of the concrete. The soil of the field is uniformly clay with some gravel in pockets. The main drainage of the field is to three sides—south, north and west.

Lighting

The lighting system is of the most modern type, with two main floodlight banks, one on the hangar at the east

THE
FLOODLIGHT BATTERY
ON THE HANGAR

end of the field, and the other on the field at the west end. The hangar bank consists of six 24-inch Crouse-Hinds ALD floodlights and one ALH floodlight. The west-end bank consists of eight 24-inch Crouse-Hinds ALD floodlights. These give a light intensity over the entire field of 0.2 foot-candles.

The No. 2 runway has two green range lights 150 feet off the end of the concrete at either end; the No. 1 runway has four range lights similarly set; and the No. 3 runway has three range lights for identification.

Obstruction lights have been installed where needed for the protection of planes using the port. There are woods to the northwest, trees to the southeast, and a pole line along the highway to the east. The obstruction lights are set at variable heights from 35 to 85 feet above the field. A high school to the south of the field also has obstruction lights on it, and the water tank serving the field has an obstruction light and also carries the 24-inch No. 24 Crouse-Hinds revolving beacon with four 500-watt bulbs with green and clear lenses. This water tank has a capacity of 30,000 gallons for fire protection and general service and may be readily increased to 75,000 gallons capacity if needed.

The wind tee at the east end of the field north of the hangar is illuminated at night by green lights. All lighting is served by parkway cable laid 18 inches beneath the surface of the ground. Prior to the laying of the runways, 3-inch Transite conduit was laid beneath the surface wherever it was known that electric cable was to be laid. In the few cases where changes were made, metal pipe was jacked through to take care of the cable after the runways were completed.

Two municipal hangars are completed and in service storing private planes and the planes of a local flying school and taxi service. The hangars are 80 x 120 feet each, with steel sliding doors which open the full 120 feet, allowing an 18-foot clearance. As this is not sufficient for the largest planes, it will probably be necessary to build additional hangars later.

Transcontinental and Western Air, Inc., maintains six regular schedules through the Dayton Airport, with three east-bound and three west-bound. The American Airlines started service on December 1, 1937, with two schedules, one north-bound and one south-bound. This brings the total of all schedules, TWA and American, to eight, of which three are east-bound and three west-bound, one north-bound and one south-bound. Also, two Chicago flights, one each way, have been added recently to the TWA service from this port. George F. Baker, Director of Service and Buildings, is Airport Manager, and the construction was in charge of John F. Hale, Chief Engineer, Division of Engineering.

Tax Assessments and Open Spaces

AN interesting suggestion for a form of community bargaining through the medium of tax assessment policies encouraging the preservation of open spaces is made in the recent Report of the Baltimore-Washington-Annapolis Area Sub-Committee of the Maryland State Planning Commission:

"The general idea is that as tax assessments tend to go up under the urge of outward pushing suburbs, a district consisting of the proposed open space would be set up. Owners within the district would receive special tax concessions, applicable so long as the property within the district is continued in the existing type of use or in any use contemplated by the control provisions.

"It is realized that there are many difficulties in arriving at a satisfactory plan of this character, but it is believed that further study may develop something that will merit a trial. There are precedents which come rather close to the situation. For instance, the statute already in effect in 16 states (as of 1931) imposing a yield tax to aid private forestry, whereby the potential value of private woodlots is not taxed (as was formerly the custom), but a special tax is put on income derived from cutting and sale of the timber. This is fairer to the farmer (cheaper for him too, usually) and enables him to carry commercial woodlots that he would otherwise be forced to put into annual return crops to meet his current taxes. Because the existence of those woodlots is a valuable thing for the public (to reduce erosion, insure raw material supplies for local industries, and so on) this form of tax policy adjustment has been considered a reasonable use of public power. Some variation of it might prove equally applicable to bring about benefits to the public in the preservation of open space. . . . Great care must be exercised to make all such tax advantages uniform within any district, and to prevent the restrictions from being used to give undue advantages to individual owners."

Aeration and Sedimentation Remove Iron from Water

High Efficiency at Jackson, Tenn., Plant

BY THE simple expedient of aeration of the water from six wells in a coke-filled multiple tray aerator, and long sedimentation, the domestic water supply of Jackson is changed from a deep-well water of 3 ppm iron and 85 ppm CO_2 to a water delivered to the consumer with 0.2-ppm iron and 8.0 ppm CO_2. The city is also experiencing the benefits of metering, for in January, 1937, the services were 75 per cent changed over from flat rates to meters. A check of the pumpage on a Sunday in cool weather this spring with the corresponding Sunday last year showed a reduction in water pumped from 4¾ million gallons to 1½ million gallons.

The Well Supply

The water supply is secured from six 24-inch inside-diameter wells driven to an average depth of 150 feet in sand formation. Three of the wells are gravel wall; two of them were installed by Layne & Bowler, of Memphis, Tenn., and one by the Kelly Well Co., of Grand Island, Nebr. The other three wells are straight driven wells with brass well screens furnished by C. M. Morriss Pump Supply Co., of Jackson, Tenn. The static level of the wells varies according to the site, but the average level of the water in the wells is 28 feet below the surface of the ground. The drawdown of the wells is about 1 foot for every 24 gallons per minute of pumping, and they are pumped with a drawdown of 150 feet.

The wells are individually pumped, three of them being equipped with 24-inch Layne & Bowler deep-well pumps, two with 12-inch Layne & Bowler pumps, and one with a 12-inch Sterling deep-well turbine pump. The pumps are all electric-driven with three 40-hp Westinghouse motors, one 40-hp G-E motor, one 20-hp G-E motor, and a 35-hp U. S. Electric motor.

All the wells are within a radius of ¾-mile of the pumping station, and all deliver to a common collector main of 20-inch diameter which goes direct to the aerator. The aerator, designed by H. B. Hunter of Memphis, Tenn., after a visit to the Century of Progress Exposition, shows the influence of the type of architecture chosen for that World's Fair. It is an attractive building measuring 84 x 20 feet and contains five batteries of six trays each, of concrete with perforated bottoms and containing about one foot of coke in each tray. The coke is renewed at periods of six months. The headers leading to the pipes are Acipco cast iron 6-inch diameter with control valves on each line. The water on passing through the six trays in a single battery flows to the 3-million-gallon reservoir and settling basin under the playground between the aerator and the pumping station.

This basin is divided into two independent sections so that one may be taken out of service for cleaning. The water is permitted to flow through slowly, and there is a material deposit of the iron, as shown by the analyses given in the opening paragraph. One section of the set-

A WATER DEPARTMENT'S CONTRIBUTION TO THE HEALTH AND RECREATION OF THE CHILDREN OF THE COMMUNITY
The wading pool for children in the water-works park adjacent to the pumping station of the Jackson plant

THE ATTRACTIVE AERATOR OF THE JACKSON WATER WORKS

tling basin is cleaned every six months, or both may be cleaned at the same time, since there is sufficient storage in the one-million-gallon standpipe which floats on the line to permit cutting out the basin for the time required for cleaning.

The present steam pumping station contains two 6-mgd Worthington steam pumps and a 3-mgd Fairbanks-Morse centrifugal with a F-M motor for electric drive. The plant is run 24 hours a day. There are two Worthington 3-cylinder, 4-cycle diesel engines with air injection driving 300-hp Westinghouse generators as standby units to provide current for the present single electric-drive pump. Plans are now under way to install a 300-gpm and a 1,000-gpm centrifugal with electric drive to give greater flexibility to the station. With these pumps installed, TVA power would be used exclusively. At the same time it is hoped that a new pumping station can be built adjacent to the present plant, and the old plant pulled down and the area turned into a park similar to the attractive surroundings which have been built up around the plant, with a children's wading pool, shrubbery and trees, and fountains with water constantly flowing. These fountains are from flowing wells with a slight sulphur content that are not used in the municipal supply.

Value of Metering

The meters were installed on 75 per cent of the service in January, 1937. The city bought 4,200 meters through a PWA bid, and the award was made to the Badger Meter Mfg. Co. About 3,500 of the meters were the standard ⅝ x ¾-inch domestic meters, and the rest assorted from 1-inch to 6-inch.

The savings in operating costs were clearly shown in the comparative pumping rates for the two Sundays mentioned. The minimum charge for water under the metered system is 90 cents per month, which allows 3,000 gallons. Most of the consumers come within the minimum charge.

Even under the flat rates, the Department showed an operating profit of $30,000 to $40,000 per year.

The water-works system is operated under the direction of D. B. Miller, Superintendent, Water Department.

Community Forests Pay as They Grow

TOWN and community forests that pay as they grow were advocated by the Forest Service as work reservoirs for unskilled labor in a recent report to Secretary of Agriculture Henry A. Wallace. Many towns and some other groups can make good use of tax-delinquent, submarginal and other cheap lands to develop valuable forest properties, it was pointed out. The Forest Service stated that such forests can often more than pay for themselves, provide recreation, and serve as work reservoirs for city and some rural areas.

The idea of community forests is, of course, not new. According to F. A. Silcox, Chief of the Forest Service of the Department of Agriculture, there are already in the United States 1,097 towns and counties in 27 states that have such forests. They cover an area of 2,889,605 acres, producing fuel and timber, protecting watersheds, providing recreation and wildlife refuges. The town without a forest in Europe is an exception, he added, and many towns, cities and communities on the continent maintain forests that have provided income and employment for many generations.

Some community forests in New England report cash profits. Others save taxes by furnishing timber for community repairs, fuel for schools, recreation, and watershed protection.

Towns and communities that have or can acquire lands for forests may obtain guidance from state forestry departments and the U. S. Forest Service in establishing new plantings and improving existing stands of timber. The Forest Service suggests planning the town forests to serve a variety of uses. Under "multiple use" management, demands for recreation can be met without interfering with the production of fuel and timber for revenue.

The Forest Service stresses particularly the opportunity these forests may provide for unskilled labor in nurseries, and for planting and forest maintenance. The use of unskilled labor has yielded good returns from timber stand improvement and similar forestry practices on both public and private land. In periods of unemployment, towns and communities with forests can put men to work and be reasonably certain of obtaining returns to cover the cost of labor.

The migration of population, ups and downs in standards of living, and other social problems, can be minimized with the aid of community forests, said Mr. Silcox. They are work reservoirs near the homes of laborers in bad times, and sources of recreation at all times.

As new forests produce revenue over a period of years, they would lose all the aspects of an emergency measure, the Forest Service Chief stated. In addition to timber and fuel as a continual crop, the forests may produce raw materials for furniture, toys, and other special products requiring the employment of skilled labor in small community industries.

The Forest Service reports that where forest growth exists on land that could be used for town forests, thinning and improvement operations may yield immediate returns from such products as fuel, pulpwood and fence posts. The operation increases the value of the stand at the same time.

Besides returns in money and recreation, town forests can make an important contribution to the coordinated land-use program of the Department of Agriculture, including flood control, wildlife conservation, and sustained-yield forestry. The protection of watersheds is a particularly important function that forests may fill, since many of the 10,000 municipal water systems in the United States have suffered a water shortage in the past five years.

States that have enacted legislation authorizing the acquisition of town or county forests include Massachusetts, New York, New Jersey, New Hampshire, Vermont, Pennsylvania, Indiana, Ohio, Wisconsin and Minnesota. The State Forestry Department in Massachusetts has offered to map and make five-year plans for any town forests upon request from town authorities. More than a hundred such forests have been established in the state.

Establishing Municipal Electrical Utilities

By RAY SMITH
Manager, Electrical Department, Loveland, Colo.

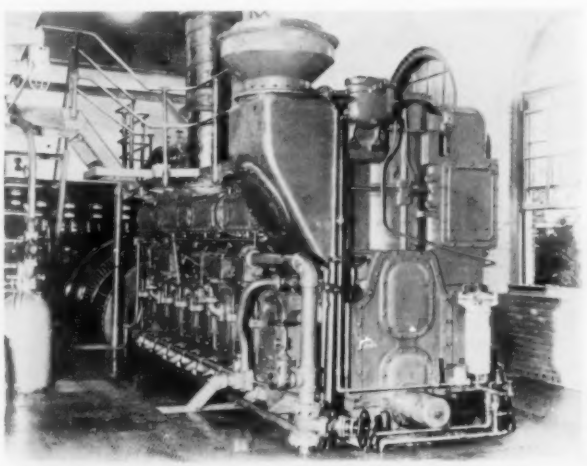
THE establishment of an electrical utility by a city does not necessarily involve a complicated proceeding. The following points have been developed in the experience of several cities which have electrical utilities.

The city should satisfy itself of the feasibility of the project, independently of any outside influence, and should obtain an expression of the sentiment of the citizens at an election.

The first action is to retain competent engineering and legal services. The engineer reports on the project to determine the amount of financing required, feasibility, etc. Care should be taken to select an engineer familiar with the municipal side of these undertakings and free from private power affiliations. His reports should cover steam, diesel and purchased power. The attorneys draft every resolution, ordinance, contract, notice or other proceeding in connection with the project before any action is taken by the city authorities.

Privately owned utility companies will probably resist, in every possible legal manner. Every action taken by the city authorities pertaining to the proposed project will be very carefully scrutinized and any fault discovered will probably be the grounds for some legal action, which means delay. One prominent engineering firm specializing on the design of municipal lighting plants reports that out of 288 plants designed they have encountered an average of 11 injunction suits for each plant built. The success or failure of the project will hinge entirely upon the reliability of the engineer's report. All the arguments for or against the bond election will be based upon this report.

The modern method of financing publicly owned electrical utilities is by the sale of revenue bonds. This type of bond is payable, as to both interest and principal, from the operating profits of the utility. Prior to the time when the validity of revenue bonds was established, it was very difficult for any city to finance an electrical utility, because the legal limits of the general debt prevented the provision of adequate funds. Recent sales of revenue bonds indicate that they are now salable at a lower interest rate than general obligation bonds, because the revenues from a municipal lighting plant are more certain than revenues from taxes.



NEWEST DIESEL AT HUDSON, MASS.
This 1,440-hp Alco-Sulzer (American Locomotive) type installed last October brings the diesel capacity to 5,115 hp; gross income $143,000, total expenses $101,000

ATTRACTIVE PLANT AT HUDSON, MASS., POPULATION 8,500

In order to finance to the best advantage, it is of course necessary to show to prospective purchasers of bonds as large a security as possible, which in this case is represented by operating profits.

Operating profits are largely dependent on the following factors:

1. System constructed according to the best engineering practice.
2. Adequate and conservative financing to cover construction and operation.
3. Management competent and free from political interference.

The capacity of the original plant may be either: (A) sufficient to provide for all anticipated growth during the life of the bonds, or (B) have only a small reserve capacity above the present demands, with adequate provisions in the financial program for the accumulation of surplus to take care of expansion.

The electrical distribution system owned by the private company, and now in use, should be appraised by the engineer and a reasonable offer made for its purchase. Should the city and the utility company be unable to agree on a fair price, then the city has a right either to condemn and take possession in the manner provided in the state statutes, or to construct a new system. Every effort should be made to purchase the existing distribution system at a

fair value. Only as a last resort should the city construct a competing distributing system. Even though the franchise may have expired, the company will continue to serve, and it may take considerable time and expense to get proper court decisions which will require it to remove its poles and wires.

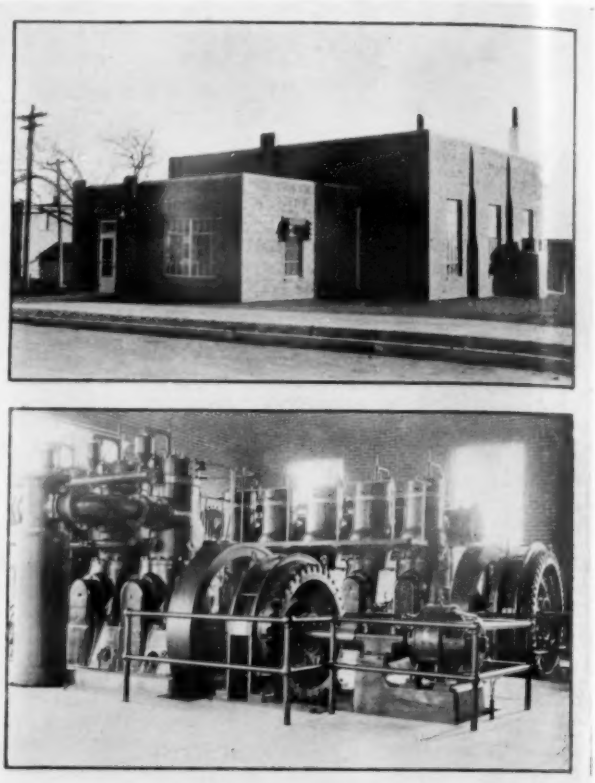
In a condemnation proceeding the consideration to be paid is fixed by a jury, after hearing testimony from both parties. Usually the testimony is so highly technical and complicated that the ordinary juryman cannot follow the witnesses, with the result that the final award is quite likely to be based on other factors than the testimony presented.

Sufficient bonds should be authorized to provide adequate funds for all costs of plant and distribution system, interest during the construction period, legal and engineering expense, tools and equipment, stock of operating and maintenance supplies, office set-up, working capital, and a liberal amount for contingencies and miscellaneous expense. The general or other funds of the city should be reimbursed for all preliminary expense incurred before the sale of the bonds.

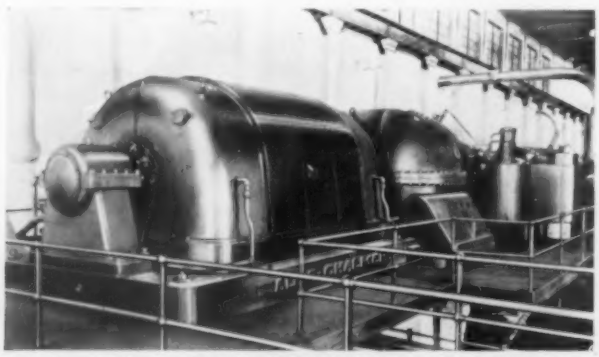
The engineer should include in his report a very carefully prepared financial schedule of operations showing for each year the estimated gross earnings, operating and maintenance expense, interest on outstanding obligations, extensions and betterments anticipated, taxes to replace losses to general fund, serial bonds payable, net annual surplus and accumulated surplus.

Bonds should be made serial in the amounts and dates as provided for retirement in this schedule. Provision should be made in the form of the bonds whereby the city may call bonds, at a definite price, in reverse numerical order, for retirement from the accumulated surplus. The accumulated surplus fund should, as quickly as possible, be built up to the amount due for interest and bond payments during the next succeeding year. It is wise to follow this practice throughout the life of the bonds, and thereafter to maintain a cash reserve fund equal to about 60 per cent of the annual gross revenue. It is not wise or safe to operate a utility of this nature without having considerable cash immediately available, nor is it wise to build this cash reserve beyond a reasonable amount.

A complete system of accounting should be established and maintained by which it will be possible to obtain accurate details of costs and earnings. A complete schedule of rates should be properly authorized for all classes of service to be rendered by the utility, and no service of any description should be rendered without proper charges being made for such services. The practice of some electrical utilities of rendering free service for street lighting, porch lighting, water pumping, lighting parks, city hall, and library, and for other public uses, makes it impossible for even the best accounting system to render a true statement of operations. If any utility is making sufficient operating profit to enable it to render free service, then, rather than doing so, let it make an annual appropriation from its surplus fund to the general fund of the city in sufficient amounts to allow the departments supported from the general fund to pay the utility for all service rendered. This method will not be a hardship on the general fund, and will tend to produce true statements of the operations of all departments and funds concerned in the transactions.



DIESEL PLANT AT DESCHLER, NEBR., POPULATION 1,177
The two Fairbanks-Morse turbines of 108 hp (1934) and 235 hp (1935) carry a peak load of 250 kw, generate 600,000 kwh in a year, and earn $18,500 gross revenue



15,000-KW ALLIS-CHALMERS CONDENSING STEAM TURBINE OF THE CITY OF CLEVELAND, OHIO

Each utility should pay for all services rendered to it by any other department of the city. Any joint use of property, equipment, offices, telephone, or insurance should require a prorating of the expense of such items.

Management

Management is probably the most important factor in the operation of a publicly owned utility. The success of any business, whether it be owned by the public or by individuals or corporations, is largely in the hands of the management. The danger of having political interference in the management is one of the greatest hazards in the operation of an electrical utility. The city should pledge itself to some definite policy of management which is as free as possible from political interference. This pledge should precede the election.

One very successful system of management is by a non-political board or commission consisting of three members,

one to be appointed each two years and to hold office for six years. The selection of the original members of the board is very important. Probably the purchasers of the revenue bonds will ask that they be represented on this board until all the bonds are retired.

Of the 2,000 municipal lighting plants now in operation, those most successful and free from political interference are operating under a utility board management. A non-political utility board usually sets up a long-time program with some continuity of policy, which is not possible where the management is subject to change at every election.

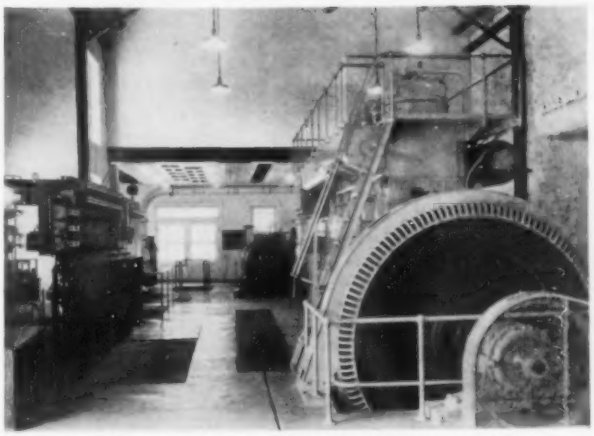
One of the most important duties of the board is to employ a competent manager. He should be made responsible for the successful operation of the utility and should have authority over all operations, maintenance, extensions, purchasing, and accounting, and the hiring or discharging of all employees of the department.

To Summarize:

Use the same good business practices which any individual or corporation would employ in constructing and operating a utility.

The charge will be made by those opposing the project that the city will lose the tax revenues from the private plant; however, many successful plants meet this argument by paying into the city treasury an amount equal to the taxes paid by the private company. The reports issued by many of the municipal plants indicate a saving in lower rates far in excess of the amount lost in taxes.

There is a direct correlation between low rates and increased consumption of electricity. The reason for establishing municipal plants has almost universally been to get lower rates, and therefore the municipal plants immediately establish lower rates and this in turn increases the consumption of electricity. This accounts for the growth and success of the municipal plants. Where private companies have met the reduced rate, it is not unusual to see both plants doubling their revenues and both selling a much greater volume of electricity.



INTERIOR OF THE MUNICIPAL POWER PLANT AT GREENVILLE, TEXAS

Two Nordberg diesel engines of 700-kw and 1,000-kw carry 97 per cent of the load on the municipal electric plant of the Greenville plant. In addition, there are 500-kw and 1,250-kw General Electric turbines. Light sales for the year to April 9, 1937, totaled $116,992; power sales $68,789. The value of free service is estimated at $16,298

EDITORIAL NOTE.—Municipal officials who are considering the advisability of establishing a municipal electric plant will find further information of value in: "Building a Municipal Electric Plant," by Robert V. L. Wright, Manager of municipally owned utilities for the city of Avalon, Calif., published in May, 1936, in *Public Management;* "Results of Municipal Lighting Plants," published by Burns & McDonnell Engineering Co., Kansas City, Mo., presenting data on 512 plants, 266 of which have reduced rates in the last two years.

Cement-Lining a 48-Inch Water Main in Toledo, Ohio

Work of T. A. Gillespie Company Approaches Completion

THE lining of a new steel water main, 48 inches in diameter and 17,000 feet in length, was recently completed for the city of Toledo, Ohio, by the T. A. Gillespie Co., engineers and contractors, of New York City. The work was done with a special machine which coats the inside surfaces of steel or cast iron pipes with a cement mortar. In Toledo the lining was applied at the rate of 500 to 1,300 linear feet of pipe per 8-hour working day. This was done by machine with a normal working crew of skilled operators, including Gillespie engineers who supervised the job.

A cement mortar of proper mixture and low water ratio was thrown onto the inside pipe surfaces from the revolving or dispensing head of the coating machine to a thickness of 3/16-inch as the machine traveled through the pipe. Loss from rebound, varying consistency and entrainment of air are eliminated by this centrifugal method of application. As the cement mix is thrown out from the dispensing head, revolving at 1,100 rpm, the impact is such as to create a dense, homogeneous lining of a thickness which can be regulated by the progressive speed of the machine. The cement lining immediately after being thrown on to the pipe is troweled and smoothed to a good surface by two sets of trowels revolving in opposite directions immediately behind the dispensing head of the coating machine.

The cement was mixed above ground at convenient locations in amounts sufficient to keep the machine operating, and then transported from the mixing location to the coating machine by means of electric-powered buggies.

The new 48-inch steel water main in Toledo, Ohio, extends from the Broadway pumping station on the Maumee River along the site of the old Lake Erie to Ohio River Canal and thence to the filtration plant, a distance of 3¼ miles. As a sustained high carrying capacity was essential for economical operation of this pumping main, Toledo, with the concurrence of the PWA authorities, selected cement lining applied by centrifugal machine after the line had been laid and tested.

WHITE

Assessment of the Fair Market Value on City Lots, Buildings and Improvements and Local Levies Assessed Thereon for the Tax Year 1937, in the City of Norfolk, Va.

	NAME AND ADDRESS OF OWNER	Description of Lot by Numbers, etc. AND Name of Street on which Lot is Situated		TAX BILL NUMBER	Value of Lot	Value of Buildings and Improvements	Total Value of Lots, Buildings and Improvements	TOTAL CITY LEVIES	EACH QUARTER Installment	EACH QUARTER Installment	REMARKS — First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
1	MARKS, JAMES R. 724 WARREN ST.	7 BLK 4 724 WARREN ST.	RD	72619	7 00	10 00	17 00	42 50	10 62	10 62					1
2	MELTON, ROBERT S. ET ALS 1507 FAIRFAX AVE.	3,4 & 5 BLK 20 855 E. MAIN ST.	OS	72620	80 00	120 00	200 00	500 00	125 00	125 00					2
3	MERCER, S. A. & SMITH, ALBE P. O. BOX 366 SPRINGFIELD, MASS.	4 & PT 3 BLK 10 9 S. GRANT ST.		72621	1 50			3 75	93	93					3
4	MILLER HOLDING CORP. 215 MAIN ST.	125.2 FT. 215 MAIN ST.	MM	72622	100 00	250 00	350 00	875 00	218 75						4
5	MINTER, SARAH L. 762 BOULEVARD DRIVE	7 BLK 44 448 DOZIER AVE.	K	72623	2 00	7 00	9 00	22 50							5
6	MONUMENT HOTEL CORP. 6999 MONUMENT AVE. RICHMOND, VA.	46 TO 10 INC. BLK 79 150 FIRST AVE.	CH	72624	2450 00	6800 00	9250 00								6
7	MURDOCK, S. T. & T. P. 924 WESTCHESTER AVE.	7 BLK 25 614 OVERLAND ST.	K	72625	1 00										7
8	MUSSELL CORP. P. O. BOX 1144	7 BLK 30 S S RIVER AVE.		72626											8
9															9
10															10
11															11
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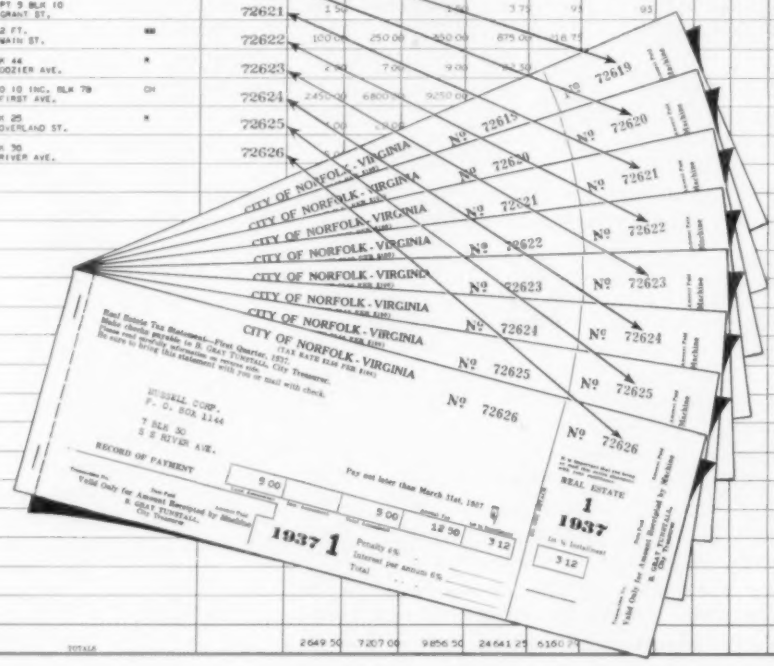
		TOTALS			2649 50	7207 00	9856 50	24661 25	6166 75						



ABOVE IS A PAGE OF A LAND BOOK, AS USED IN NORFOLK, VA., WITH CORRESPONDING BILLS. THE FIRST THREE COLUMNS OF THE BOOK ARE PRODUCED ON THE ADDRESSING MACHINE SHOWN AT THE LOWER LEFT; THE OTHER COLUMNS BY THE BILLING MACHINES AT THE LOWER RIGHT

From Pencil to Machines

By THOMAS P. THOMPSON
City Manager, Norfolk, Va.

NORFOLK'S tax-billing and land-book-making systems have passed from pencils to machines and from books to cards.

In 1930, the land books were made up by pencil, with carbon paper for three copies in addition to the original, since the law requires four copies. These penciled sheets gave the name of the owner, a description of the property, its location, the assessed value of the land and the building, the total for both, and the tax levy as figured from the total assessed value and the prevailing tax rate.

Typewriters Come into Use

In 1931, typewriters were put into use, manually operated, with 36 names to a page, and the "rough land books" were replaced by a card system, on which the levy for each separate piece of property was recorded, with the other information.

There were about 72,000 cards, and the number of pieces of property today is about the same. Each time the tax rate was changed, the levy listed on each card had to be changed by hand.

The typed form of land book was used through 1934. After these books were made up, they were sent to the office of the city treasurer, where clerks and typists made tax bills from the sheets in the books and then addressed the envelopes.

Then Billing Machines

Beginning in 1935, the city installed Burroughs accounting machines to make out the land books. Up to and including 1935, the city collected taxes annually. Taxes were due in July and, if not paid then, 1½ per cent interest was charged until November, when tax bills had to be paid in full to avoid a 5 per cent penalty.

Beginning with 1936, these accounting machines were used to make out the land book and prepare the tax bills at the same time, in one operation. As the quarterly system of paying taxes was being put into effect, it was soon realized that this system practically necessitated the use of machines.

The new machines printed the land books and made out the tax bills, four copies of the land book and six copies of each tax bill, one for each quarter to be sent the taxpayer, an office copy and an extra copy. The new method also did away with the necessity of separate work for typing the name and address of each taxpayer on envelopes, for the "window" type of envelope was adopted. The tax bills had to be mailed out on or before March 1, which required three shifts of operators on the machines, each shift working eight hours. This work required six weeks of six days of 24 hours each, and not only were there some errors in typing names and addresses, but also the last three of the nine carbons (five for the bill and four for the land books) were indistinct. Further improvement was therefore authorized by the City Council in the purchase of Addressograph equipment for this year, and the detailed work for the preparation of the 1937 land book and tax bills was finished by January 1, 1937. With this method, the four copies of land-book information were made out in originals, and the bills were made as one original and five clear carbons. Once the metal plate was checked, no further checking of name, address, and property description was necessary.

The land-book sheets are prepared by an Addressograph equipped with a multi-column listing device, by which each plate makes two impressions, the first one for the name and address in the first column of the sheet, and the second one for the property description opposite the first impression in an adjacent column. At the same time the machine prints consecutive numbers in the third column of the sheet. Twenty-four taxpayers' names and addresses with corresponding property descriptions and duplicate numbers are listed on each land-book page. After a page has been completely listed, the machine stops automatically, so that a new page can be put into position and listing continued. Listing on one page requires less than one minute. Sheets and bills then go to the accounting-machine operators, who insert the assessment and the levy for the year and the quarterly payments, due in March, June, September, and November. There is a stub to each quarter's bill, and on payment this stub is retained to be recorded in the treasurer's office. The body of the bill is returned machine-receipted to the taxpayer. (See p. 38.)

Definite improvement in the 1937 tax bill forms is shown over those for 1936. Those for 1936 had black strips of carbon as a part of each separate sheet, frequently smudging both taxpayer and clerk. The current series of bills for each piece of property are of the fanfold type, interleaved with one-time carbon sheets with a "snap-out" arrangement which removes all carbon paper when the writing of the bills has been completed.

Our records include Sanborn maps on a scale of 1 inch = 50 feet, which show all the facts pertaining to the location and size of property, ownership, assessment, street numbers. These maps assure that all property in the city is assessed and taxed.

The Norfolk system of keeping assessment data and collecting taxes is not only eminently satisfactory here, but has attracted inspection by officials of many other cities seeking efficient mechanization of tax work.

One Taxicab Per 1,000

In the 188 cities of over 50,000 population, with a total population of 40,000,000, comprising one-third of the total population of the United States, there are being operated over 40,000 taxicabs, or an average of one cab for each 1,000 population—varying from one cab for each 160 population in Washington, D. C., to one cab for each 500 population in New York City and Boston, one for each 800 population in Baltimore, one for each 1,000 population in Seattle, one for each 1,500 population in San Francisco, one for each 2,000 population in Philadelphia and Detroit, and as high as one to each 3,000 in Los Angeles and many other cities. The estimated gross income for this grouping is over 150 million dollars per annum, with an estimated annual mileage of 1½ billion and over 400 million passengers annually. This city transportation business employs over 75,000 drivers, garage men, and helpers.

GENERAL VIEW OF GREEN BAY, WIS., SEWAGE-TREATMENT PLANT AND SPHERICAL GAS HOLDER

Green Bay Sewage Pumped by Digester Gas

Spherical Gas Holder Permits Storage of Gas for Power

THE Green Bay, Wis., Metropolitan Sewerage District recently increased the capacity of its sewage-treatment plant and extended its intersecting sewer to take care of all the sewage originating in the city of Green Bay and the surrounding area. The completed project is the result of efforts on the part of the City Council, the Wisconsin State Board of Health and the Committee on Water Pollution, extending over a period of ten years and involving numerous surveys, reports and a test case before the Supreme Court to determine the validity of the state law enabling communities to organize metropolitan districts.

Prior to the formation of the Metropolitan Sewerage District, all the sewage was emptied into the East and Fox Rivers. Conditions in the East River District were particularly serious, for at certain times of the year there is little or no flow, and the oxygen in the water is entirely depleted by the dumping of industrial wastes and sewage of a population of 20,000.

Because of the acute condition in the East River District, the project was divided into two parts. A sludge digestion plant of sufficient size to treat the sewage from this section was built and put into operation in 1935. The main interceptor and the outfall were built large enough to permit the addition of the Fox River District sewage, and the plant was so designed that its capacity could be increased easily.

One of the major expenses of the Green Bay plant is the pumping of sewage. Poor soil conditions made it necessary to construct a deep system and pump the sewage at the plant against a head of 50 feet. The power consumption for 1935 and 1936 was 544,200 kwh, which, at an average cost of 2.42 cents, amounted to $13,108.57.

Plans to Use Sludge Gas

When enlarging the plant, preparatory to adding the sewage from the Fox River District, the engineers made arrangements to use sludge gas for the operation of internal-combustion engines which would drive the generators and thus reduce the abnormally high cost of operating the plant. This equipment has been in operation for about six months and has demonstrated that the amount of gas produced is sufficient to operate the plant during periods of low flow when storm water does not add to the volume to be pumped.

There are four digesters at the Green Bay plant, one of which is equipped with a Downes floating cover. Water heated by the exhaust of the gas engines circulates through coils in the digesters, maintaining the temperature between 85 and 90 degrees F.

The gas collected from the digesters flows directly to the engines. Any surplus over that required to operate the engines is pumped into a 50-foot diameter spherical gasometer. The pressure in this Hortonsphere varies from 10 to 30 pounds per square inch, depending upon the volume of gas in storage. The capacity of the spherical gasometer was determined by calculating the power necessary to operate the plant during the shut-down period and to carry the peak load at times of excessive pumping. At present the plant is producing a surplus of 5,000 cubic feet of gas per day, which is placed in storage for peak load and shut-down service.

A novel method was used to purge the spherical gasometer when it was put into service. Exhaust from the gas engines was first discharged into the holder for a period of time. The carbon dioxide from the engine displaced the air, leaving an inert, non-explosive gas. This inert gas was then displaced with methane gas from the sludge digesters.

The storage of gas at sewage-treatment plants is a relatively new practice. It is, however, the same principle as storing water for efficient power-plant operation, and is just as necessary. In some cases the gas is used only for heating purposes, while in others it serves as a fuel for gas engines to generate power, as at Green Bay.

The plans and specifications for the original plant as well as the recent extensions were prepared by the Jerry Donohue Engineering Co., of Sheboygan, Wis.

The House Production Industry

A Nation-wide Opportunity for Business to Join Hands with Civic Progress

By CHARLOTTE RUMBOLD
Acting Secretary, Committee on City Plan, The Cleveland Chamber of Commerce

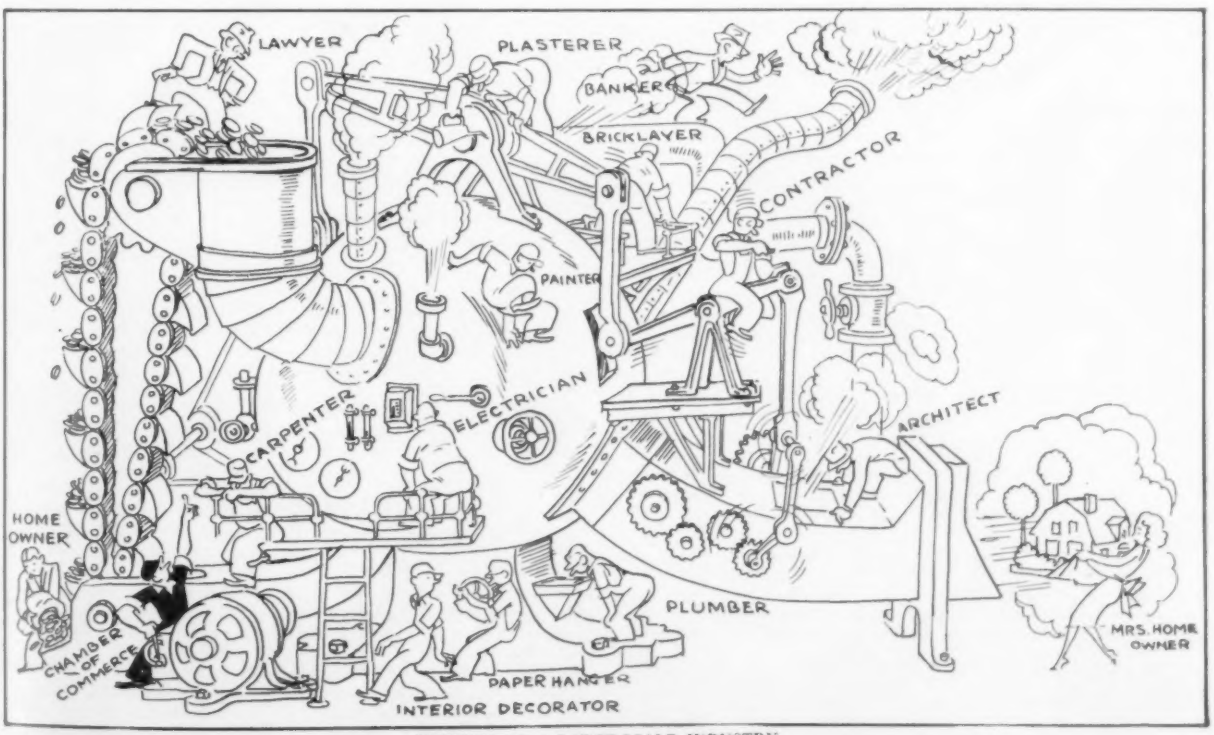
ONE of the signs that spring is not far behind is the gathering evidence of a residential building boom. We have had that in other springs, but this time the hue on the robin's breast seems almost neon lighted.

First—the President's housing bill. It is the only important measure that has reached such a stage in both houses of the present Congress as to make it seem likely of early enactment—even though it suffers a sea change in the process. However it comes out, it went in as a concrete proposal to provide house building as a mass production industry.

It is proposed that national mortgage and construction companies be formed by large building material and appliance companies to undertake large-scale building of low-cost housing units for sale or for rent. These companies would issue and sell National Mortgage Association debentures, to be secured by the Federal Housing Administration. There is included in the President's plan a Federal Wage Insurance Company to guarantee the wages of building labor.

Anyone who has followed new idea legislation through city council, state legislature or Federal Congress, knows the probabilities are heavily against its coming out in the same shape in which it went in. But whether when the bill becomes law it permits Government-guaranteed debentures to cover 90% or 100% of insured mortgages, whether the interest rate is 5½% or 5% or less, whether the National Mortgage Associations may issue debentures up to 15 times or 20 times their capital stock, whether the permissible cost per room is $1,000 or $1,500, whether building trade wage rates are the going hourly rates, or whether they are to be Federal-guaranteed, yearly wages, this is the first formal Government-sponsored attempt to promote a residential building industry.

Food and clothing, the other two basic physical necessities of mankind, have been taken out of the handicraft class, and most of us eat food from the bakery or the can or the freezing plant, and wear clothing from the factory, with improvement to our health and appearance, and with gratitude for the variety and cheapness of the products of mass industry. Transportation—by train, plane and automobile—is in the hands of mass industry, and it has changed our world. Motion pictures and radio—both mass industries—have brought recreation and education within the reach of all of those of our millions of people who can see or hear.



HOUSING AS A LARGE-SCALE INDUSTRY

A cartoon from *The Clevelander*, suggesting how the many interests concerned may cooperate to the benefit of all

The preliminary essentials of mass production industries are large capital, great managerial abilities, high wages, and a large potential market. The characteristic end is continuous production of articles at high efficiency and low unit cost.

Community Building as a Large-Scale Industry

Other mass industries in the United States have started without any preliminary loan from any Reconstruction Finance Corporation of $50,000,000, or any other sum, or any help, financial or even advisory, from any governmental agency. Perhaps low-cost housing could too. From New York comes the news that ten of the largest insurance companies of the United States have agreed to put $2,000,000,000 into housing construction throughout the United States. These insurance companies are great reservoirs of money. Not money to be raised by new taxes, nor drained out of the tax money in the United States treasury, but money already saved by hundreds of thousands of persons and waiting to be invested. With this money in hand and idle, the insurance companies will not need to look for markets for national mortgage debentures. Such money can secure continuous production, great managerial ability, the highest man-hour production from labor. It will not be interested in building one house here on a 40-foot front lot, another there on a 70-foot lot—it will be interested in building *communities*. When it comes to a city with a proposal to build a project with houses by the hundreds, it will receive municipal cooperation in modernization of zoning laws, so zoning will be done for the protection of such a community, not for the individual lot. And building codes will be modernized to permit the use of the new materials now ready and waiting in the experimental laboratories. It will coordinate the 35 or so processes that go into building a house from appraising and buying the lot, through the building of the house, the advertising and selling or collecting the rent. It can guarantee annual income to the building trades workers, because it can guarantee 40 weeks a year work, without placing an extra service charge on the house to cover a premium to the Federal Wage Insurance Company. And it can build at low enough unit cost to reach the enormous potential market for homes costing $3,000 or less, or renting for $30 a month and under.

It is doubtful whether there is a pressing need for more houses in the $10,000 to $15,000 class. No such need at least as would justify large-scale production. There is, however, sound business justification for entrance into a much lower cost field. No figures on the "housing shortage" or the "housing market" are guaranteed by anyone. But the best available indicate that more housing is needed at the $3,000 level than at the $4,000—and still more at the $2,000 level. "Every $1,000 off the cost of the house adds 1,000,000 customers to the market."

The field of rehabilitation of sections of our cities should prove profitable to corporations with sufficient capital to undertake large-scale and thoroughgoing replanning, demolishing where necessary, modernizing where possible, and building a brand-new and perhaps different community use. Every large city has a blighted area awaiting rejuvenation. And perhaps every large insurance company finds itself the reluctant owner of parts of such areas. This fact and the present lack of more attractive investments may bring rescue to the centers of our cities.

Building or rebuilding as a mass production industry for residential construction, with all its possibilities of economy and quantity, is in sight. And, as with other mass production industries, no one can foretell the result of its impact on our social system.

Federal Agencies Which Play Major Roles in Housing

IN an effort to clarify the confusion caused by recent rapid shifts in the field of housing and to straighten out the complex names and functions appearing currently in the news, the National Association of Housing Officials has outlined the following "dictionary" of agencies, which in one way or another play major roles in housing.

DIRECT ACTIVITY BY THE FEDERAL GOVERNMENT

F.S.A.—Farm Security Administration (of the Department of Agriculture).—Superseded the Resettlement Administration and is engaged in the completion of that part of the Resettlement Administration's program dealing with the development of rural and suburban projects of both large-scale and scattered nature. Administers the Bankhead-Jones Farm Tenant Act. Administrator: Will W. Alexander.

W.P.A.—Work Progress Administration.—Superseded the Federal Emergency Relief Administration (FERA). It is the emergency agency directing the Federal work relief program, which includes projects for the demolition of scattered, unfit housing or housing on publicly owned project sites, and the construction of land improvements related to the development of public housing projects. Administers the Emergency Relief Appropriation Acts of 1935, 1936 and 1937. Administrator: Harry L. Hopkins.

LOANS AND GRANTS FOR LARGE-SCALE PUBLIC HOUSING

U.S.H.A.—United States Housing Authority.—Supersedes the PWA Housing Division. Administers the United States Housing Act of 1937. Administrator: Nathan Straus. Only local public housing agencies, commonly called Housing Authorities, are eligible for U.S.H.A. loans and grants.

INSURANCE OF MORTGAGES

F.H.A.—Federal Housing Administration.—Administers the National Housing Act. Administrator: Stewart McDonald.

LOANS TO INDIVIDUALS

H.O.L.C.—Home Owners' Loan Corporation (of the Federal Home Loan Bank System). An emergency agency which formerly extended credit to home owners who were in danger of losing their homes and could be refinanced with Government credit with some reasonable prospect of repayment of loans. Administers the Home Owners' Loan Act of 1933. Head: John H. Fahey, Chairman, Federal Home Loan Bank Board, the governing organization.

F.C.A.—Farm Credit Administration.—An agency to handle complete financing of farms, including, where necessary, construction or rehabilitation of houses. Administers portions of the Farm Credit Act of 1935. Head: William I. Myers, Governor.

LOANS TO HOME FINANCING INSTITUTIONS

F.H.L.B.S.—Federal Home Loan Bank System.—Administers portions of the Federal Home Loan Bank Act and portions of the National Housing Act. Head: John H. Fahey, Chairman, Federal Home Loan Bank Board.

INSURANCE OF INDIVIDUAL ACCOUNTS IN HOME FINANCING INSTITUTIONS

F.S.&L.I.C.—Federal Savings and Loan Insurance Corporation.—Administers portions of the Federal Home Loan Bank Act. Head: John H. Fahey, Chairman, Federal Home Loan Bank Board.

ORGANIZATION OF LOCAL HOME FINANCING INSTITUTIONS

F.S.&L.S.—Federal Savings and Loan System.—Administers portions of the Federal Home Loan Bank Act. Head: John H. Fahey, Chairman, Federal Home Loan Bank Board.

Among private national agencies in the field are: The National Public Housing Conference, which fosters education in this phase of housing; the National Housing Committee, which has an educational program including all phases of public and private activity in housing; and the American Federation of Housing Authorities, a group of state and local authorities formed preceding passage of the U. S. Housing Act of 1937.

The National Association of Housing Officials is an organization of public administrators which is designed to improve administrative practice and clear information for public housing agencies and officials.

Meeting the Demands of Winter Traffic

Citizens of Bangor No Longer Put up Their Cars for the Winter—Public Works Department Provides Passable Streets

By P. H. GLOVER
City Engineer, Bangor, Maine

NOT so many years ago, the well-to-do citizen of Bangor had two duties which he religiously performed on Thanksgiving Day—to eat his dinner of turkey and to put up his car for the winter. Now, with the more abundant life upon us, he is lucky if he has chicken for dinner but he runs his car all winter and takes it as a personal grievance if he has to use chains.

Snow-plowing of streets started in Bangor in 1926, when the Chamber of Commerce purchased two tractors, which were later turned over to the Highway Department. Before that time the streets were rolled, or a small amount of work done spasmodically with horse-drawn plows. Bangor was the first city in Maine to go into mechanical plowing.

Each year sees an extension of this service rendered by the Public Works Department, but no additional appropriation with which to take care of the demand. Any service rendered once, in an emergency, must be continued forever. Each year sees more streets tarred in summer, and more snow removed in winter, and the end is not in sight.

Preparedness

During a bad storm we keep checking weather conditions with the Maine Central Railroad as to the status of the storm at various points on its line. This winter we are getting additional detailed reports from the Airport, and so have a very good idea of what to expect several hours in advance. The average storm strikes Portland from four to six hours, and Augusta two to three hours, before it reaches Bangor. By ascertaining when the storm ceased at these places, and the amount of snow that fell, we can roughly determine when it will stop in Bangor, and also whether the storm is swinging out to sea, or whether the full brunt of it will strike Bangor.

Clearing the Sidewalks

Bangor is one of the few cities in Maine that plow the sidewalks. The majority of cities compel the owners to keep them clean. This plowing causes more trouble in winter than any other activity. The streets and roads are wide enough to make the use of large equipment feasible, while the sidewalks, on the other hand, are narrow and bordered with trees on one side and steps on the other. The day of heavy teams is passed. Formerly we hired fifteen teams and had as many more on the waiting list. Now it is almost impossible to get five teams at any time. This has forced the city to the use of mechanical equipment for sidewalk plowing.

We started out with two small Caterpillar tractors with La Plante-Choate 5-foot blade plows. Five feet is too wide, because no man can put a 5-foot blade over a sidewalk of equal width and not do some damage, especially in a blizzard. The next plow we purchased was mounted on an Allis-Chalmers wheel-type tractor. This tractor is faster than the others and does less damage in the fall and late spring when the ground is not frozen, but was not intended for heavy work. The next piece of equipment obtained, for sidewalks, was a Cletrac with a 4½-foot Sargent blade. This has more power than the earlier units and gives the operator a few inches leeway on either side.

These four units, together with five teams, take care of about 70 miles of sidewalk. We hope soon to obtain two more units, which will enable us to dispense with the teams or, if the teams are still available, to handle the work in less time.

Keeping Traffic Moving

The equipment for snow removal on streets and roads consists of a Caterpillar 10-ton tractor with a Wausau V-plow; a Caterpillar Thirty with a La Plante-Choate plow; four 5-ton trucks with V-plows made by city forces, but this year two of them equipped with Clarke plows; a 5-ton Walter all-wheel-drive truck with a Sargent full hydraulic plow; our tar distributor, equipped with a 12-foot Sargent blade plow; a Ford truck with an 8-foot Monarch blade and a Chevrolet with a Sargent 8-foot blade. These two light trucks are each equipped with Ruxtell rear ends.

In a storm the 10-ton Caterpillar and the Walter go out on the country roads. The distributor takes one of the long concrete roads leading into the city, and the four 5-ton trucks and the two smaller ones handle the removal of snow on the city streets. As soon as the storm shows signs of abating, the Barber-Greene snow loader starts cleaning up the downtown district. The three blade plows clean the squares, and all available trucks haul snow. The snow loader, which is of the smaller type, was purchased three years ago and paid for itself in one year. In one storm, before we received it, the payroll jumped from $200 a day to $1,180. Between $400 and $500 of this increase could have been cut if we had owned the loader at that time.

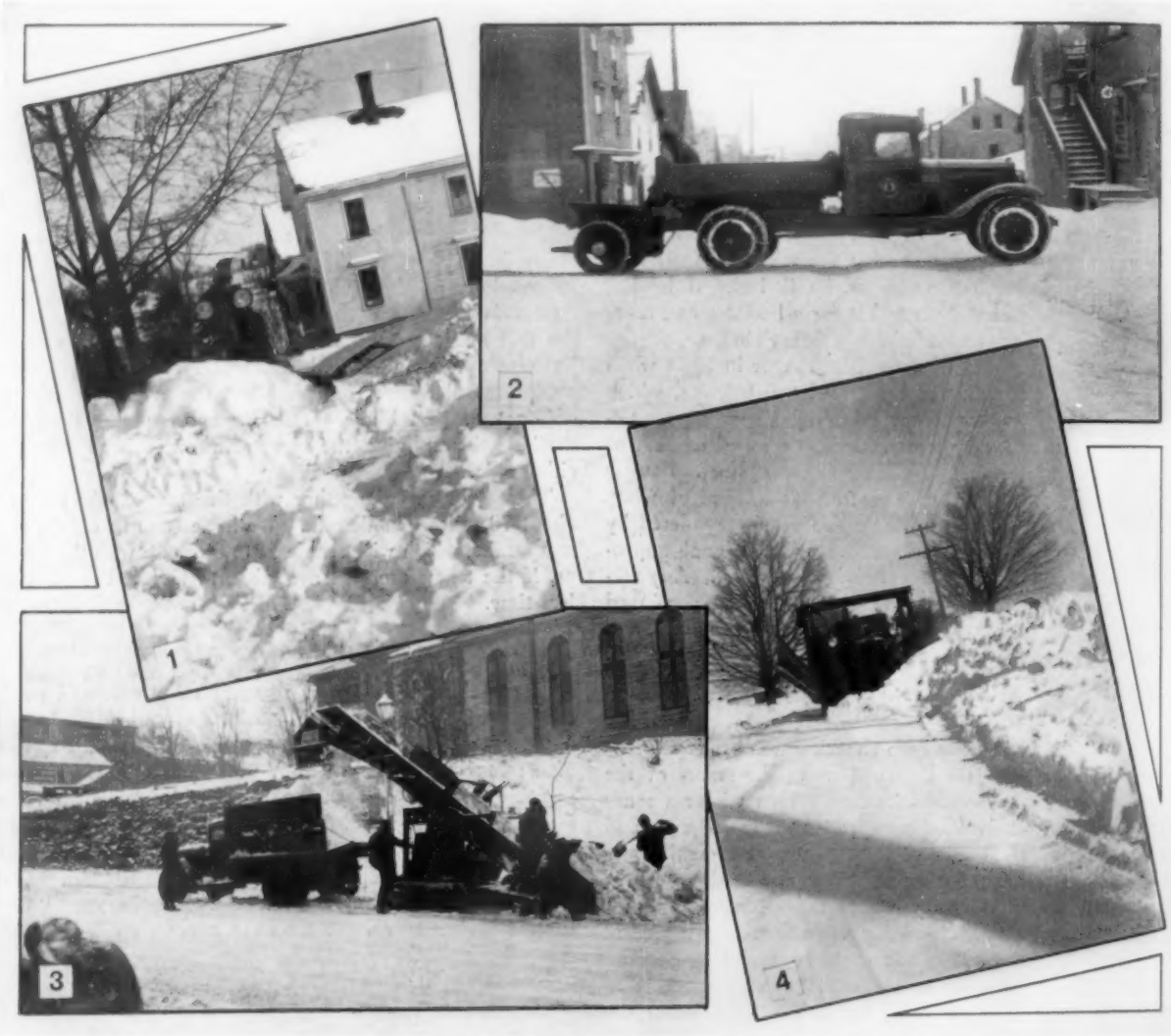
The work of plowing goes on without stopping, from the time snow reaches a depth of three inches until the last street and road has been cleaned to its full width. The Caterpillar Thirty has the job of cleaning all the dead-end streets and places where the other equipment cannot travel.

All told, there are about 105 miles of streets and roads kept open in the winter. It is the hardest kind of work on both men and equipment. The appropriation for this department has been cut to a little over one half what it was some years ago. The replacement of equipment has been tardy, which means a constant battle during a storm to keep the trucks running. It is just as cheap in the end to replace the equipment when it starts to wear as it is to try to get the last mile out of it. It certainly is easier on the operators to handle the new rugged units on which they can depend.

Every storm is a separate problem and must be handled differently. A road which will give very little trouble in one storm will be drifted badly time after time in the next storm. The difficulty of handling a storm does not necessarily depend on the amount of snow which falls. In one of the worst storms, in the winter of 1935, the actual snowfall was only four inches. The snow was fine and hard and was driven by a gale of wind. It came at a time when there were high snow shoulders on both sides of the outer road. The storm lasted about six hours, but the wind continued for three days. The Walter truck and the 10-ton Caterpillar were on the job for the entire time running practically continuously.

Icy Sidewalks and Streets

Icy sidewalks are sanded by two small Petersen-Neville sanders drawn behind small trucks. Where the trucks cannot go, the sand is thrown on by hand. The streets are sanded either by a large sanding machine of the same make, or direct from the trucks by hand casting. About 1,200 cubic yards of sand and cinders is used during the winter. The area of streets covered has increased about fifty per cent in the past five years, and will probably increase as much more in the next five.



SNOW-REMOVAL ACTIVITIES IN BANGOR, MAINE

1. Cletrac and 4½-foot Sargent blade clearing a sidewalk. 2. One of the sidewalk sanders in action. 3. The Barber-Greene snow loader at work. 4. The Walter truck and Sargent hydraulic plow widening the trafficway on a country road

Complications

Some of the work is really unnecessary; for example, the plowing of sidewalks on dead-end streets and on others

where the houses are scattered. A very large majority of the pedestrians walk in the street anyway. After several heavy snowfalls, plowing the sidewalks of narrow streets constricts the roadway almost to one-way traffic. The residents demand that their sidewalks be plowed, not because it is of any benefit to them, but simply because the people on the next street have their walks plowed. They are also the ones that want their sidewalks plowed immediately. The fact that the main streets should receive attention first, and that the Department has not the money to invest $10,000 in additional equipment which would be used only a few times each year, means nothing to them. They would be the first, also, to howl if their taxes were raised.

Re-Use of Old Sheet Asphalt Successful in Birmingham, Alabama

Other Street Repair Methods Outlined

WHEN the grade-separation program began in Birmingham some two or three years ago, a large yardage of sheet asphalt in excellent condition was removed and stored in the city yard. Prior to this time, such material had been reheated and used for repair work. The means of reheating was a homemade steel pan with fire-box underneath. This arrangement was primitive, yet good results were obtained by careful use, controlling the heat to the extent of softening but not coking the material.

The materials reclaimed from the underpass work have been used in resurfacing old bituminous pavements through the business district. The old pavements were thoroughly cleaned and a prime coat or tack coat placed thereon. The holes or depressions were first filled with the reheated surface mixture and brought to the general surface of the old pavement. Then the reheated asphalt was applied in the usual manner, ranging in thickness from one to two inches, creating a new surface. This new surface was placed on the used portion of the roadway but not on parking areas. The cost of the work has averaged approximately 18 cents per square yard, including reheating, laying and rolling.

When the material was to be reheated, it was thrown into the heater in pieces of one square foot and smaller, or about as it broke up when removed from the old roads where the underpasses were constructed.

Resurfacing with Asphaltic Limestone

During the past year, a considerable program of resurfacing abandoned street-railway tracks has been undertaken. The material used was Alabama asphaltic limestone hot mix. The track paving was first carefully inspected and all broken portions of the old pavement removed. Where the tracks at crossings had been abandoned in one direction and remained in use for street-railway or railroad purposes, the special crossings were removed and continuous rail was placed where the former crossings had existed.

Depressions were filled and repairs where the old pavement was removed were made by surfacing with a binder course. A tack coat was then applied over the entire area to be surfaced, using approximately 1 gallon of primer to 15 square yards. On chilly days, at the outside edges where the new pavement was feathered out to meet the grade of the old pavement, the old pavement was preheated before the rock asphalt pavement was laid. Resurfacing over the tracks ranged in thickness from ¾-inch minimum above the outside rails to 1½ inches thickness at the crown of the street, the edges being feathered out to zero thickness at the point of contact between new and old pavement.

The original paving in the street-railway tracks was largely brick or concrete; however, in some instances, the track pavement was bituminous pavement and penetration work. About 150,000 square yards of this type of pavement has been laid in Birmingham in the last year. The work of resurfacing the old pavements was done by the Street Department under the direction of the City Engineer, J. D. Webb. The covering of the abandoned street-car tracks was done under contract and supervised by the City Engineering Department.

SEVENTH AVENUE NORTH, BIRMINGHAM, SHOWING THE RESURFACED ROADWAY WITH THE STREET-RAILWAY TRACKS COMPLETELY COVERED WITH ROCK ASPHALT

Solving the Problem of Public Comfort Stations

"The City Rest House"

By ROYAL S. COPELAND, M.D.
United States Senator, New York

THERE are about 1,000 municipally owned comfort stations in the United States. There should be 10,000. This is not a fanciful round number used for effect; it represents one public comfort station per 7,000 of urban population.

The need for a liberal policy and system of public comfort stations is much greater than is vaguely realized even by municipal officials. The need is particularly acute among women—all women, who with the noteworthy exception of those belonging to the Women's City Club of New York, are understandably reluctant to demand as women what are indeed the rights of all citizens.

Comfort stations are needed for the outdoor crowd made up of policemen, firemen, city inspectors of all kinds, Federal officers, soldiers, sailors, salesmen and shoppers. They are needed, in fact, by all pedestrians, and their virtual absence is one more menace to health and comfort.

Having some specialized knowledge of what the deprivation of these essential health facilities may mean in cases, I find some difficulty in restraining an indignation that has frequently been voiced by physicians, health officers, and public-spirited men and women. But looking at the fact that in the face of all types and volume of demands for these facilities, they have never been provided except grudgingly and, I feel I must say, sneeringly, I have decided instead of being angry to be helpful if possible.

When a thing that is urgently needed, and has been powerfully agitated, has never been provided, there must be weighty obstacles.

They Cost Too Much

There is just one obstacle to the adequate provision of comfort stations—cost. Everything has an output and a cost, which must be measured against each other. When the value of the output is greater than the cost, the thing is usually provided promptly. But when the value of the output is exceedingly difficult to arrive at, it is usually estimated to be much smaller than it actually is, while the cost when absolutely known assumes a large and hard quality which overshadows the feebly estimated value of the output.

In short, comfort stations cost money, too much money, to build, and again too much money to service under direct municipal control.

In New York City, for example, a typical modern comfort station costs $25,000 to $35,000 to build and $9,000 per year to operate. This station is of course situated on municipal property, and there isn't anything like enough municipal property in the congested districts where comfort stations are most needed. In the absence of such property, the land costs are prohibitive. Furthermore, even if municipally-owned plots were available on Seventh Avenue, Broadway, Sixth, Fifth, Madison, and Lexington Avenues, at 34th, 43rd, and 57th Streets, the picture of these 50 temples of comfort would be rather grotesque. They would be temples or Bastilles, for that is the way they are conceived, and that is what is the matter with them. They are as likely to cost $80,000 as $30,000. Either, without revenue, is prohibitive. Yet the need remains.

At the opening session of the Greater New York Safety Conference in 1937, R. H. Grant, General Motors' Vice-President in charge of sales, told how when it was found that far too many automobiles were insufficiently supplied with lubricating oil, there was some talk of correcting the situation by a law. He solved the problem by pointing out to the service-station men that they could make some money by showing the car owners and drivers that they needed oil. He gave these men an incentive, and they soon saw that most of the cars that stopped at their stations went away with sufficient oil.

Let me try to give municipal officials an incentive by which you can equip your city with public comfort stations at small or no cost, certainly at reasonable cost.

Before we go farther, let us drop the term "comfort station" from the municipal vocabulary. From this place forward, we shall talk about the *City Rest House*. It will cost you as little as $15,000 to build, and it will be self-sustaining through revenue produced chiefly by a concession bid, and therefore operated by a private concessionaire.

Simple, Tasteful, Inexpensive

The kind of building I have in mind is one of simple design. It is in perfect taste, I am tempted to say—dignified, although in this modern age and generation, the word is meaningless. Indeed, this building is not so much dignified as it is attractive, modern. Whatever dignity it may have will arise from the fact that it was built and is owned and supervised by the municipality, which is to say—all the people of the community.

The building that I visualize is a dual building. Except for the entrance doors labeled respectively MEN and WOMEN, there is no connection whatever between the two wings, which are the men's and women's toilets, and the central building, which is a restaurant serving beverages, sandwiches and other simple refreshments.

This type of utility may be classed with the municipal swimming pool, which is steadily growing in public favor and in certain communities serves as a social center in summer. The City Rest House need not become a social center, but it will come to be accepted as a social asset to any town. The enlightened public attitude which establishes it is in keeping with these forward times.

While the fact that the city is back of the enterprise will give the concession a certain standing, particularly with visitors who have become familiar with the excellence of similar utilities in other cities, the city is in no sense in competition with the business men and interests. The city says: "We need a City Rest House; we are going to build one; then we will take open bids on its operation; if there are no bids, we will operate it ourselves in a modest manner sufficient to pay expenses." In most instances there would be no lack of bids. Such prestige as official ownership might give the concession would be further increased by wise management.

The concession, at its minimum, can be operated efficiently with the services of a man and a woman. Additional help would mean that the concession had built up that much business. Running costs (including interest on the investment), air-conditioning (including heating and ventilating), cleaning supplies, and repairs, would amount to a surprisingly low figure.

Municipal officials, many of whom have been troubled at one time or another by the lack of this essentially municipal service, can end this deficiency. At the same time they will render their city a lasting service that will be appreciated, by establishing a City Rest House.

A powerful bloc of favorable opinion will usually be found in the women of the city. The most important and comprehensive report on the subject ever made was issued by the Women's City Club of New York in 1932. This 66-page report started with the statement: "The provision for adequate comfort station facilities is a definite part of any program for a clean and well-ordered civic life." The women of your community will support you in this project, which means that it is a public service not only for them but for their families as well. What is wanted is not a monumental building whose cost and upkeep will be an added burden, but the simple facilities combined with a modern concession which of itself is an asset to the city.

Modern Police Equipment

By JOHN A. CUTCHINS
Director of Public Safety, Richmond, Va.

BEING an old soldier myself and knowing the confidence which is given a man by the knowledge that he is well armed and knows how to use his arms, we have equipped our police force with the newest type of police revolver, and every man has been given instruction in target practice. Every man knows his weapon and how to shoot it and one-half the force is now qualified in the marksman, sharpshooter or expert class. Good public relations is a valuable asset of any police administration. When a citizen calls a police officer in time of trouble and any shooting is necessary, the citizens naturally want the offender hit, and not some innocent bystander.

The duties of a police force too often are regarded as being merely routine. No greater mistake can be made, and making it may wreck the career and destroy the usefulness of an otherwise good leader. It is the emergency, which in time undoubtedly will arise, that will show what type of man the chief is. If in times of peace he prepares properly for the emergency of war, then he shows himself a real leader. The recurring strikes in certain sections of our country have demonstrated the value of training, coolness of head, and the ability to perform trying duties under great stress.

Our radio is in an office adjoining the detective bureau, with a window between the two rooms. On one side of the window is the radio operator, and on the other is the detective operating our private police switchboard.

Adjoining the office of the chief of police is the identification department, which uses the Battley system of fingerprinting for classifying single fingerprints. This department has recently been furnished the latest camera of the Eastman Co., for mugging. This is an indirect lighting camera with a dual back, one for taking pictures of the front and side views of the subject, and the other for taking pictures of crime scenes and for making photostatic copies of letters, checks and fingerprints. It is believed that this is the first camera of its kind to be used in the South. The photograph of the subject is 5 x 7 inches, and the photostat makes a 10 x 14 reproduction.

With the ever-multiplying problems presented by the complexities of modern traffic, the demands on police forces necessarily will multiply. We must handle our traffic by signs and traffic signals. Traffic signals are not things to be purchased as one purchases a flashlight at a hardware store, but to be bought and installed only upon the advice of an expert. My own conclusion is that a traffic light should never be installed until the traffic is so continuous and heavy in one direction as to keep cross traffic waiting indefinitely.

We have an accident-investigating squad with one car on duty every hour of the day. The squad car is equipped with a camera, measuring devices, and brake-testing machine.

Another thing which should be given attention, as was done in my own city, is the establishment of a suitable burglar-alarm system in the banks, and a proper connection of these alarms with the police system. The A.D.T. system is used in our city, connecting the city system with the banks.

Another installation of particular interest is the shadow box recently installed at headquarters. This is 10 feet wide, 11 feet high, and 4 feet deep. The front is covered by a curtain through which the person on the outside can see but through which the suspect on the inside cannot see out. The suspect enters the box by a door at the side. A heavy railing confines him against measured distances on the wall, so that the observer may get an accurate idea of his height. Twelve indirect lights flood him. Six are footlights tilted upward at an angle of 45 degrees, while six other lights in the ceiling of the box cast their reflection downward at an angle of 45 degrees. With this box the witnesses can look at the suspect with entire freedom and have the best possible means for a complete and proper identification of him.

—From an address at the 1937 convention of the League of Virginia Municipalities.

Street Cleaning and Refuse Disposal in Jacksonville, Florida

Local Newspaper Comments on Report of Commissioner of Health and Sanitation

COMMISSIONER P. M. ULSCH, of the Department of Health and Sanitation, prides himself on the street-cleaning and garbage-collection facilities in Jacksonville, Fla. His 17-page report was the topic of a fairly long editorial discussion in the *Jacksonville Journal*. The newspaper abstract of the report of the Department of Health and Sanitation is reproduced here as an excellent example of the interesting story a newspaper can make of a well-prepared, thoroughgoing municipal report.

The Times-Union Says:

"The price of beefsteak has gone up, but the cost of throwing the bones and trimmings away has gone down.

"It is costing only 1½ cents per family per day to collect and dispose of Jacksonville's garbage and keep the streets clean. That is half a cent less than it cost to do the same job last year, says the Street Cleaning Department's Annual Report which City Commissioner P. M. Ulsch made public today.

"Jaxons aren't throwing as much refuse into their garbage cans as they did last year, either, the report said. The decrease amounts to 2,991,664 pounds, or 1,496 tons, when comparing the 104,956,488 pounds, or 52,479 tons, last year with 101,966,824, or 50,983 tons, for this year.

Lots of Dirt

"During 1936, street sweepers, garbage trucks, trash trucks, and mule carts traveled 484,542 miles in Jacksonville, keeping garbage cans empty and the streets spic and span. That is 682 miles less than they traveled in 1935.

"From streets and from curbings, the Department last year disposed of 63,997,385 pounds of grass, leaves and brush, 2,499,398 pounds of sand, and 18,935,252 pounds of ordinary street sweepings.

"But a garbage man's life is not just one garbage can after another. Last year there were such things as goats, snakes, alligators, rabbits, dogs, cats, horses, cows and calves to break the routine monotony.

"The dead animal department collected and cremated 9 goats, 1 rabbit, 1 snake, 1 alligator, 25 horses, 42 mules, 67 cows and calves, and 4,420 cats and dogs.

"The figure does not include dead animals disposed of by the humane society or the city's dog catcher.

Where They Go

"The report is 17 pages long. It begins by pointing out that the Department has 138 employees, 98 of whom are white, 40 Negroes.

"It adds that Jacksonville has 59.44 miles of brick-paved streets, 37.52 miles of asphalt streets, 34.45 of concrete, 45.38 of limerock, 59.28 of hard surface and 10.69 of shell, and so forth. The total is 246.76 that are covered by the Department. The report says all four city incinerators have been repaired and remodeled within the last two years and are in good condition, but that there is need for more.

What It Costs

"Present incinerators have a daily capacity of 240 tons, while the Department is hauling from 250 to 350 tons of garbage a day.

"The report adds that 23,872 miles of streets were swept at a cost of $20,332.60, or an average cost per sweeper of 8½ cents a mile. The Department operates three sweepers.

"Street sweeping cost $72,713.46, garbage collection $111,803.88, and garbage disposal $33,113.33, for a grand total of $217,054.67. Appropriated in the budget for the work was $218,532.91. The saving is $1,478.24.

ONE OF THE FLEET OF INTERNATIONAL REFUSE-COLLECTION TRUCKS DUMPING A LOAD AT THE JACKSONVILLE, FLA., INCINERATOR

"The cost per ton of collecting, hauling and disposal of garbage, sweepings, sand, brush, leaves, grass, ashes and cans is given at $2 per ton, as compared with $1.89 for the previous year."

A Word from Commissioner Ulsch

Commissioner Ulsch kindly offered to furnish THE AMERICAN CITY with additional information, which we are pleased to offer to our readers. He reports that all garbage and street-cleaning trucks run on definite schedule; thus it is possible for the Department to locate quickly any unit, so that inquiries as to when refuse will be picked up and the complaints from householders that arise from time to time can be handled promptly. Three inspectors travel constantly about the city, keeping a close check on the work of each truck and calling the office regularly for any instructions which they might be required to pass on to truck crews out on routes.

This efficient garbage-collection system picks up approximately 50,000 cans every 24 hours.

Improving Village Water Works in Lombard, Illinois

By GUSTAVE H. DEUCHLER
The Engineering Service Co., Aurora, Ill.

LOMBARD is a fast-growing residential community in the western suburban area of the city of Chicago. Incorporated in 1869 and having a very small growth until 1920, the village then began to grow rapidly in population as indicated by the Federal censuses. In 1920 the population was 1,331, increasing to 6,197 in 1930.

Improvements to the water supply and distribution system were partially developed during the ten-year period. Necessary additions to the system were contemplated, but not constructed until 1937. The water supply consists of two wells, one 2,038 feet deep, and the other only 80 feet deep. The deeper well, in the Potsdam sandstone, is the main water supply owing to the better quality. The shallow well, in Niagaran limestone, is used as standby owing to the hardness. Water from these wells is pumped by electrically driven deep-well centrifugal pumps, which supply the high-lift centrifugal pumps, which in turn discharge directly into the distribution system. The pumping operations are equalized by a 60,000-gallon elevated storage tank, built in 1907 by the Chicago Bridge & Iron Co. The delivery from each well is approximately 500 gallons per minute, and the average daily consumption is about 55 gallons per capita.

Major improvements to the distribution system made between 1920 and 1930 included a 10- and 12-inch supply main encircling the village and connected directly to the main pumping station. The need for additional storage was noticeable in 1930, as evidenced by the high pumping rates and low pressures during the summer months. From a study of the water usage in the village, it was decided to construct a 250,000-gallon elevated storage tank which would permit more uniform pumping during heavy drafts on the system and provide higher water pressure throughout the village. In addition, storage of this volume would maintain the service to consumers during short interruptions of the power supply or failure of the pumping equipment. The new elevated storage tank is located in the high-level district to reduce the necessary height of the tower, and is located near the large supply main encircling the village to reduce friction losses in the pipe lines. This tank was also erected by the Chicago Bridge & Iron Co., and provides an elevated storage of 25 gallons of water per capita for a population of 10,000.

A 600,000-gallon reinforced concrete ground storage reservoir was constructed at the main station to meet fire-flow requirements. Aeration and sedimentation facilities making use of this reservoir aid in reducing odors as well as cutting down the iron content of the well water. Additional high-lift pumping equipment with electrical control was installed to provide large discharge for fire flows, and an additional discharge main was laid from the pump house to the center of the distribution system.

The total construction cost, including all land, engineering and legal services, was approximately $75,000, which included a grant of $22,500 from the Public Works Administration.

THE NEW 250,000-GALLON ELEVATED STEEL STORAGE TANK OF THE LOMBARD, ILL., WATER WORKS

Tannery Waste Treatment in Pennsylvania

And Its Applicability to City Tanneries

By FRANCIS B. MILLIGAN
Engineer, Sanitary Water Board, Pennsylvania Department of Health

PENNSYLVANIA has given particular attention to the problem of tannery waste treatment. In 1924 a tannery waste disposal committee was formed, with the Chief Engineer of the State Department of Health as Chairman, and members representing the tanners; funds were contributed by the various tanning companies, and the time of several of the Department's engineers and chemists was given to the work.

Existing literature on the subject was studied, many laboratory investigations were made, and two full-scale experimental plants were operated, one for a few months, the other for several years. No magic processes of waste purification were discovered, but some which appear suited to Pennsylvania's commonest needs were developed by utilization of published data, by application of laboratory findings after testing at full scale, by the adaptation of engineering principles used in sewage treatment, and by the assimilation of certain methods long used in the industry.

Results of these studies are embodied in a pamphlet entitled "Treatment of Tannery Wastes," published by the Department of Health in 1930. The basic principles set forth have been put into practical use at the majority of sole leather and sporting goods leather tanneries in the Commonweath, and are adapted to wastes produced both by the vegetable and the mineral processes of leather tanning. They have been applied almost entirely, however, to tanneries the wastes from which are discharged directly to public waters without passage through city sewer systems, since in the latter case the municipality becomes responsible for the wastes, the Commonwealth having no direct jurisdiction. Of such tanneries, 55 per cent have erected and are operating acceptable treatment plants, 25 per cent have works under construction in accordance with certificates of compliance issued by the Sanitary Water Board, and the remaining 20 per cent are preparing plans for submission to the Board.

During the past several years, improvements in technique have been many, but there is much still to be learned before the ideal treatment can be regarded as established. Most recent improvements have been along engineering lines, in the evolution of devices best fitted to accomplish the sort of treatment recommended. This treatment is suitable in principle for use at a city tannery. While no very compact plants have as yet been constructed, the constant tendency is to develop more compact installations.

Tannery Wastes

An average tannery in Pennsylvania processes 25,000 pounds of hide each day, producing about 7 U. S. gallons of waste water per pound of hide. Of this volume, about 7 per cent is sludge.

The volumes and characteristics of the waste waters vary widely during the operating day. Wastes from the cleaning and unhairing of hides carry mud, lime, particles of flesh and hair; spent liquors from tanning and bleaching vats contain complex and colored organic material. The combined wastes are high in suspended, colloidal and dissolved solids, color, odor and oxygen demand, the latter being an accepted measure of the decayability of a waste.

The pollution of a stream may arise from several causes, such as disease germs in sewage, turbidity, deposits of sludge on the bed of the stream, color and exhaustion of dissolved oxygen. There is a certain amount of oxygen dissolved in river water; when sewage or industrial wastes enter the stream, they tend to take up the oxygen, and when most of it is exhausted, fish life cannot be supported, and anaerobic decomposition or decay of the wastes occurs. The rate of flow of the stream and the quantity and quality of the substances discharged thereto are important factors in the problem of reducing pollution.

Practical Treatment Methods

Methods of waste treatment now in use are thought to be reasonable and practical and are devised in successive steps, each step giving an added amount of purification in order to meet various conditions. These methods involve briefly:

(1) Mixture of all wastes, sedimentation with removal of sludge, and discharge of the settled liquid at a uniform rate throughout the 24 hours.

(2) Separation of spent tanning liquors, small in volume but high in putrescibility and color, their storage during months of low stream flow followed by slow controlled discharge through periods of high water.

(3) Aeration by means of trickling filters with resettlement preceded in extreme cases by chemical coagulation.

After the establishment of the first step in treatment, its actual effect is observed and tested before additional treatment is required.

Fairly satisfactory mixture and sedimentation of the raw wastes is obtained by the use of primary settling tanks of the flowing-through type with an 8-hour nominal detention period and without special mixing equipment, followed by secondary tanks of the variable-level type, with capacities equal to 16 hours average flow. Where sludge is removed mechanically by mechanical scrapers

which drag it to pump-sumps, or by a movable chain-bucket apparatus, tank depths are about 8 feet, length to width ratio is 5 to 1, and the influent is distributed as evenly as possible across the width, one foot below the surface. In the primary basin an effluent weir, preceded by a scum board, extends the full width of the tank. The secondary basin provides uniform 24-hour outflow by means of perforated, horizontal, float-supported pipes acting as outfall weirs, discharging through swinging draw-down pipes, float valve and control box to the stream.

Where sludge is removed by hand, the most satisfactory layout consists of three tanks or earthen lagoons proportioned about as outlined in the preceding paragraph, and operated in rotation on the fill-draw principle, one being always out of service for cleaning. The capacity of each equals one day's waste volume plus 35 per cent for sludge storage; there should also be provided a similar and secondary tank for equalization of flow and resettlement. This tank, since it collects relatively small quantities of sludge, can be cleaned on Sundays when necessary.

Sludge Disposal

The disposal of sludge is a difficult problem for all tanneries. It is the most costly part of waste treatment, especially for city tanneries, because the sludge has a strong tendency to clog sewer lines. Most cities therefore require its removal from tannery wastes which are to be admitted to their sewers.

Sludge removed from sedimentation basins can be handled in various ways:

(a) By use of sludge-drying beds, the dried sludge being disposed of as fertilizer, the chief value being a 10 per cent lime content but with little nitrogen or phosphorous, or by dumping on waste land. The beds are not underdrained, since this has proved of small value, but skimmer pipes are used for the removal of rain and other top waters. They have a total surface area equal to 1.0 square foot per pound of hide processed per day, and are dosed to a depth of 2 feet with wet sludge having an average moisture content of 95 per cent. When dried to 80 per cent moisture, this is removable from the beds with shovels and wheelbarrows.

(b) By use of vacuum filters, although this seems to require careful conditioning of the sludge and, while feasible, is relatively costly and could be recommended only in a case where space is rigidly restricted. It has been used on a laboratory scale for typical tannery waste, and under special conditions at full scale.

(c) Wet sludge may be piped to large sludge storage lagoons where the sludge can dry over a period of years and eventually be removed by power shovel and dump-trucks and carted to a dump or elsewhere; or the wet sludge may be carted in tank trucks directly to a dump. Both these methods of disposal are in current use.

Storage of Spent Liquor

Storage of the spent tan liquors during the summer months as listed under step (2) above, is useful only at tanneries which have a fair amount of available land and discharge to public watercourses. Lagoons in simple excavation, of capacity equal to 325 gallons per pound of hide per day, are entirely satisfactory. The lagoons are equipped with swinging draw-down pipes. No other apparatus is required, and the cleaning and operating costs are almost nil.

Secondary Treatment

Trickling filters for aeration and consequent stabilization of the settled tannery wastes have not been required as yet in any Pennsylvania tannery. Full-scale units operated at an experimental plant for over a year utilized 6-foot depths of ¾- to 1½-inch coke, or wood chips of matchstick to clothespin size, dosed continuously at the rate of 1-1/3 million gallons per acre per 24-hour day. Dosing was accomplished by revolving arms with orifices so spaced as to insure even distribution over the surface of the bed. Filtration was followed by resettlement in a small secondary basin with a 4-hour nominal detention period. Chemical coagulation using 300 parts per million aluminum sulphate per gallon at a pH adjusted to about 6.0 with sulphuric acid or lime gave good results, although the cost was too high to encourage this method of treatment except perhaps during periods of very low stream flow.

Rapid advance is occurring in the development of improved settling tanks and mechanical equipment for removing sludge from basins and drying beds.

The City Tannery

As applied to a city tannery, the most acceptable plant in the light of experience to date in Pennsylvania would appear to be as follows:

A sump for the collection of all raw wastes by gravity flow.

A sturdy non-clogging sewage and trash pump, preferably equipped with automatic float control, for pumping the raw wastes to the treatment works.

A combined mixing and settling tank rectangular in shape, ratio of length to width as 4 is to 1, depth 6 to 8 feet, overall capacity equal to one day's waste volume. This tank should be equipped with two paddle-type mixers placed near the influent end and designed to permit the installation of two similar mixers near the outfall end as required; mechanical sludge scrapers of any standard type for moving the wet sludge to sumps whence it could be evacuated by sludge pumps; suitable influent ports for raw waste; perforated float-supported pipes acting as outfall weirs and discharging the partially settled liquid through swinging draw-down pipes and pump or control box to a secondary tank. The mixing paddles should be operated slowly while raw wastes are entering the tank, or about 8 hours daily. A 7-hour period of quiet settling should follow, after which the partially settled wastes should be withdrawn to the secondary tank, leaving a 2-hour period for removal of the sludge with the scrapers and pump.

The secondary tank should be of the variable-level type equipped with ports arranged to distribute the influent as evenly as possible across the width of the basin about 1 foot below the surface and with float-supported swinging discharge pipes as in the primary tank with float valve and control box for discharge of the effluent, 22 hours per day, to the municipal sewer or stream. The dimensions of this secondary tank should duplicate those of the primary tank. It should be furnished with mechanical sludge-removal devices for use during the two hours each day when the tank is idle. Only relatively small quantities of sludge ought to reach this tank.

In the opinion of the writer, sludge removed from the settling basins can be handled by dewatering on sludge-drying beds as described in an earlier paragraph. If there is insufficient room for this, or until dewatering on vacuum filters has been more completely perfected, the most satisfactory method of sludge handling would appear to be by means of an elevated wooden tank for storage and compacting, with ports in the floor of the tank through which the sludge could be withdrawn, as required, into trucks furnished with watertight and covered bodies for hauling to waste land located at the outskirts of the municipality.

Such a plant as that just described should provide an effluent readily handled in sanitary sewage-treatment works, non-corrosive with a pH about 8 due to its lime content, and carrying less than 1½ per cent settleable solids by volume. There should be practically no deposition of solids in the city sewer.

Street Repairs at Sardis, Mississippi

Town Apologizes for Need of Repairs on Main Street

SARDIS is a name that has come to the fore in construction and flood-control circles of late with the start of construction of Sardis Dam some 6 miles southeast of the town. There is another reason for the writing of this article, namely, that when we saw the patching of the main street of Sardis under way and asked about the work, the foreman in charge of the WPA labor doing the work apologized for the need of it. It seems that this is the first time that the pavements in Sardis have even needed patching. Thinking that this was merely a justifiable civic pride, we drove over the other paved streets and found them all in excellent condition without sign of patches. Sardis believes that it pays to pave well in the first place on a good foundation.

Two crews of twelve men each were working and wasting not a minute from the time the foreman marked the place to be cut out and patched until the final tamping and turning back the area to traffic. As soon as the section was marked, a laborer with an axe cut the low section out and laid out the piece for use on some back street. The edge was not cut vertical, for that makes it difficult to operate the axe and also to remove the piece, so the cut was on a sharp angle.

The edge of the hole was painted with liquid asphalt, and then an Alabama rock asphalt from a large stockpile was shoveled into the hole. One of the men broke up the lumps the size of a hen's egg with his hands as they showed up under the careful raking, to smooth the patch to uniform consistency and level. Six men in the gang with hand tampers about 6 inches square pounded the patches to solid, compact material even with the surrounding pavement.

The two gangs were composed of one man cutting the old broken or low asphalt with an axe, one man breaking out the material when cut, one man raking the rock asphalt after the two shovelers had filled the hole, six men tamping, and one man sweeping the pavement ahead of the work and cleaning out the hole ahead of the patch to make sure that there was no loose material remaining under the patch.

The work was in charge of S. T. Newton, WPA foreman, under the direction of E. W. Manning, Street Commissioner. The labor was part WPA relief labor and part regular employees of the town of Sardis.

HAND TAMPING WAS DONE WITH VIM, VIGOR AND VITALITY

SPREADING ROCK ASPHALT OVER AN AREA BEING PATCHED, SARDIS, MISS.

The Care of Screenings Shredders

By R. J. BUSHEE
Sanitary Engineer, Jeffrey Manufacturing Co., Columbus, Ohio

THE disintegrating action of the Jeffrey hammer mill type of sewage screenings shredder is obtained from the shearing action between the ends of the hammers and the sharp edges of the fixed bars in the bottom of the grinder casing, and also from the cutting action of the fast-moving knife-edge hammers. In order to get this shearing effect, it is necessary that the blades revolve at a speed which will keep them in position by centrifugal force and, since the cutting action depends on the difference in inertia between the screenings and the blades, it is also necessary that the blades move fast to get this effect.

Experience has shown that the best peripheral speed of the blades is about 12,000 feet per minute. With most sizes of grinders this requires a speed not obtainable with electric motors, and the drive is through a belt, usually a V belt.

The size of the ground product can be controlled by adjusting the spacing between the bars. The purpose of the spray of water in the grinder is to wash the ground screenings between the bars. Owing to the rotation of the machine, the water is thrown at the bars with a considerable velocity. This keeps the bars clean and calls for a smaller amount of water than would be required if the flushing action of water only was depended on to carry the ground screenings through. The amount of water required can best be determined by experience and should be kept as low as possible to conserve water and power.

For automatic operation, the water supply to the shredder should be turned on and off with a solenoid valve in the motor circuit. A separate manually operated valve should be installed on the motor line in series with the solenoid valve to control the rate of the water supply.

Feeding the Screenings

A prime factor in the successful operation of the screenings grinder is that it be fed at a uniform rate. Where there is a considerable amount of screenings or where fully automatic operation is desired, this is best accomplished by means of a belt conveyor. The arrangement should be such that the grinder comes up to speed before the feed is started.

With automatic control, it is also necessary to adjust the time interval between operations of the machine so the amount of screenings accumulated on the belt will not be sufficient to overload the shredder. This is usually accomplished by having the shredder operate each time the screen rake operates. The belt and grinder must be arranged to run a sufficient time after the screen cleaner stops, in order to grind up the accumulated screenings.

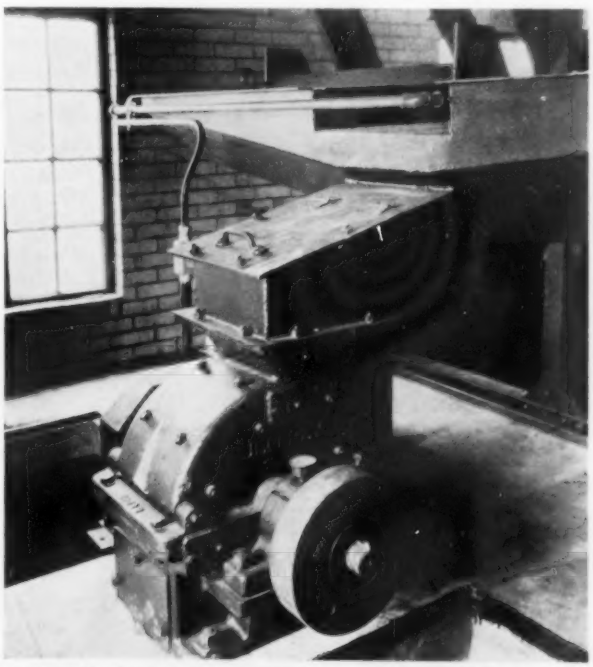
For normal operation, the screenings are usually dropped from the screen rake into a pan where they can be raked into the shredder. Where this is not possible, they can be dumped on the floor or into a pan, and the grinder can be fed by a fork.

The best rate for hand-feeding can be learned from experience. When overloaded, the machine slows up, and feeding should be stopped until it comes up to speed again. The characteristics of a squirrel-cage motor are such that it will slow up only when heavily overloaded. However, the maximum possible rate of feed can be determined by this method, and then the actual rate to use can be estimated at about two-thirds of this.

If possible, the ground screenings should be dropped into the flowing stream of sewage. Where they must be carried for a distance before returning to the sewage, it is best accomplished in an open channel with additional flushing water if necessary. This is to prevent the ground rags from matting together.

Care of Swing Hammers

After a period of about three months, with average use the swing hammers become dull and must be reversed. The type usually employed is reversible and double-ended, so that four cutting surfaces are available before the hammers must be discarded or resharpened. The hammers can be resharpened on an emery wheel, although it is usually cheaper to discard them and buy a new set when all the edges are dull. The bars in the bottom of the shredder should also be reversed when the edges become dull. After one reversal they should be discarded. A set of bars commonly lasts as long as a set of hammers, or



A JEFFREY SCREENINGS SHREDDER AT THE RICHMOND, IND., SEWAGE-TREATMENT PLANT

This unit has a rated capacity of 500 pounds per hour with a power consumption of less than 1 kwh per 100 pounds

about a year with ordinary use.

To reverse or replace the hammers in the hinged-top machine, the top is swung back and the four long rods passing through the hammers are removed. The hammers are then free and can be reversed or replaced. In reassembling, be sure to replace the cotter pins holding the rods in place. With the hinged cover plate type of machine, it is necessary to remove a small cover plate on each side of the machine to withdraw the rods passing through the hammers. The bars in the bottom of the machine may be removed by backing out two set screws holding a breaker bar in place. The rack sections are then slid out and can be reversed and replaced, to get a new cutting edge. When it is necessary to replace the bars, they can be removed from the rack spacers in which they set and the new bars put in their place.

Lubrication

The Jeffrey screenings shredder has grease-packed ball bearings. It is best to renew the grease once or twice a month, since there is usually a small amount of water leaking or spilling on the bearings, which tends to wash the oil from the grease. The ball-bearing motor should be greased about twice a year. The V belt should be only tight enough to prevent slipping.

Protection

It is almost impossible to damage a hammer mill type of screenings shredder with ordinary use. When overloaded, the hammers swing in and the machine is slowed down by the braking action of the load. If the feed is stopped, the machine will cut its way out and come up to speed again.

It is not necessary to pick out large pieces of wood or even stones from the screenings, for they are ground easily and quickly. It is necessary that the motor be protected from damage from overload by a thermal overload relay.

Utilization of Sewage Sludge as Fertilizer

AT the sixty-sixth annual meeting of the American Public Health Association in New York City, the Committee on Sewage Disposal of the Public Health Engineering Section presented its report on "The Utilization of Sewage Sludge as Fertilizer." The purpose of this Committee report was to assemble all available data on this subject. It presents a clear statement of the art with facts as ascertained by various workers, to enlighten laymen, doctors and engineers who are not familiar with sewage treatment or agriculture in its broadest aspects. The Committee made a very complete study of all available articles and papers written on the general subject, from the standpoints both of sewage workers and of horticulturists.

The complete report will be published in full by the American Public Health Association at a later date, but we wish to present to our readers the conclusions for their guidance:

1. Sewage sludge is of use as a fertilizer if properly prepared and applied. Its value varies with the type.

2. Fresh sludge is seldom used and may be troublesome because of grease content, odors and bacteria present.

3. Digested sludge, whether wet, air-dried or heat-dried, appears to have use as a substitute for manure, and is of about the same fertilizing value. In its wet form it must be used relatively close to the sewage works. In its air-dried form it may be worth while to transport it a short distance, perhaps 20 miles more or less. In its heat-dried form with a sufficient nitrogen content, it may justify a considerable haul. The nitrogen content, however, is relatively low (0.5 to 3 per cent dry basis) as compared with heat-dried activated sludge (3 to 6 per cent dry basis).

4. Activated sludge, heat-dried, appears to have real value as a source of organic nitrogen fertilizer, whether used directly or in mixture. It is free from weed seeds, blends quickly with the soil, when applied has a slight odor for a very short period, and can be used with safety in fertilizing practically all crops requiring nitrogen in organic form.

5. The sewage works offering digested sludge are scattered all over the United States. The air-dried sludge is most commonly used locally within an easy distance of truck haul. Most of the works give away this sludge. Many load it free of charge.

6. Air-dried digested sludge should preferably be disintegrated or ground to remove lumps before distributing for use. When so prepared, a charge is usually made in addition to a charge for bags.

7. Both wet and air-dried digested sludge should be handled like manure and plowed under as soon as practicable after distribution.

8. Heat-dried digested sludge was prepared in 1937 at only three plants, Dayton, Ohio, Rockford, Ill., and Plainfield, N. J. Years ago at Baltimore a contractor abandoned heat-drying of air-dried digested sludge, because it was financially unsuccessful. Fire has temporarily interrupted marketing at Grand Rapids, but the heat-drying plant is being rebuilt. Part of the Rockford plant has recently burned. It would appear that the heat-drying of digested sludge depends for its success on such conditions as soil and crops, and on the effort and skill of the sewage-works manager in exploiting the product, as well as on the analysis. The cost of equipment and operation is a bar to such procedure in small works.

9. Enriching heat-dried digested sludge with suitable chemicals has been anticipated at Rockford, Ill., but not on the entire sludge output. This appears to have been done for a particular buyer for sale in competition with heat-dried activated sludge.

10. Digested activated sludge apparently falls into the digested sludge classification when judged by its analysis and use.

11. Heat-dried activated sludge appears to have a ready market at the present time, which the plants at Milwaukee, Pasadena and Houston are unable to satisfy. This type of sludge sells retail in bags (by the bag, ton or carload) and wholesale in bulk at a somewhat lower price, determined by the market price of its content of organic nitrogen and phosphoric acid.

12. Heat-dried activated sludge is of value in the fertilizer and agricultural field for its organic nitrogen and phosphoric acid content as well as humus, and its effect as a conditioner in mixed fertilizers. As such, with suitable nitrogen content, it may justify a rail haul of 1,000 miles more or less.

13. Where organic nitrogen is required, heat-dried activated sludge can be used with safety at any reasonable time.

14. The cost of dewatering and heat-drying activated sludge on a small scale appears to have deterred those in charge of the smaller works from following this practice.

15. With the exception of the Southern California citrus orchards, no organized handling of air-dried digested sludge from a number of adjacent plants has been found. However, a large number of plants, both large and small, have developed a market for their entire output. There is no uniformity of charge or of success in disposing of the sludge. In many small plants a knowledge of the uses of sludge appears lacking, although a number of operators would like information.

16. Heat-dried activated sludge is the least odorous, and fresh sludge the most odorous, of the various sludges. The degree of odor from digested sludge may depend on the completeness of digestion. It is therefore desirable that all air-dried or fresh sludge be turned into the soil as promptly as possible.

17. From the hygienic standpoint, heat-dried activated sludge and heat-dried digested sludge appear safe for any reasonable use in agriculture or horticulture. Digested sludge, air-dried, appears safe for such purposes if used like manure and plowed under when preparing for a crop, and if care is taken not to apply such sludge thereafter on root crops or low-lying leafy vegetables which are eaten uncooked. Thorough digestion and air-drying, as well as storage of the air-dried sludge, afford a sufficient protection. The Committee knows of no case of sickness traceable to the use of digested sludge or activated sludge.

Fresh sludge should be regarded as only one degree removed from night soil and treated as such, being used only on forage crops and then applied and plowed in promptly thereafter.

The Committee then presents a group of four recommendations leading to the more general use of sewage sludge in agriculture and floriculture, as follows:

1. Each sewage-works operator should endeavor to popularize the use of sludge by florists, farmers and other users of fertilizer. Presenting the facts regarding sewage sludge to individual users, before farmers' associations and in farmers' publications, should be helpful. Indicating the value of the sludge (supplemented by other fertilizing material if necessary) by application to lawns, flower-beds, shrubs, trees and garden crops at the sewage works, should prove decidedly educational.

2. More attention should be paid to the follow-up of the use of air-dried digested sludge, so that a more authoritative study of actual use and results obtained might be available for those interested.

3. Agricultural experiment stations in various states should be urged to conduct studies similar to those of De Turk and Fraps by properly controlled field tests, and to determine the agricultural value of various sludges, as well as the effect of such constituents as the ether-soluble matter.

4. Laboratory workers might well continue the investigations of Ruchhoft and ascertain more definitely the life history of pathogenic bacteria during sludge digestion, and the bacterial flora of various sludges, such as raw, digested, air-dried and heat-treated.

Sewage Pumping in Decatur, Alabama

THE rise of the lake back of Wheeler Dam on the Tennessee River necessitated the installation of a new intercepting sewer in Decatur, Ala., and the installation of two pumping stations.

In the main pumping station are three Fairbanks-Morse 5-inch column-suspended, vertical, dry-pit, sewage pumps driven by F-M 15-hp, 1,150-rpm, 3-phase, 60-cycle, 220-volt vertical motors. Each unit has an individual float control that cuts in according to the inflow to the station. A fourth unit, consisting of an F-M 8-inch pump driven by a 10-hp vertical ball-bearing motor is used for handling storm water only in case of heavy rains. The large pump has a capacity of 2,100 gpm at 15-foot total dynamic head, and each of the small units has a capacity of 1,200 gpm at 31-foot head.

THE MAIN SEWAGE-PUMPING STATION AT DECATUR, ALA.

The Riverview pumping station, which serves an outlying section of Decatur, is equipped with three F-M 4-inch vertical-column, suspended sewage pumps, each driven by an F-M 10-hp, 1,150-rpm vertical motor with automatic float control. Each of the units has a capacity of 500 gpm at 39-foot total dynamic head.

ARC WELDING IN BUILDING CONSTRUCTION

Approval of welding by New York and Chicago in recent building code revisions is concrete evidence of the progress of a new structural process. Welding provides strength exceeding riveting. This greater strength, added to reduce weight and cost of steel fabrication and erection, plus the important advantage of silent erection of the steel, accounts for the increasing acceptance of the new process. Recently the James F. Lincoln Arc Welding Foundation, P. O. Box 5728, Cleveland, Ohio, has attracted the interest of many architects, structural engineers and designers throughout the country by offering 24 awards totaling $14,200 for studies of welded design in the structural field and four principal awards totaling $26,000, for structural studies. Program closes June 1, 1938.

For the Replanning of Cities by Neighborhood Areas

Realtors Redraft "Neighborhood Improvement Act" for Protection and Development Through Action of Property Owners

LAST year the National Association of Real Estate Boards suggested for consideration by city planners and state legislatures a draft of a state statute under which considerable powers would be given to the various neighborhoods in a city to control their future protection and improvement as self-determining communities. As a result of suggestions offered by the American City Planning Institute and by specialists in municipal government and administration, this proposed "Neighborhood Improvement Act" has now been redrafted and is offered by the Association as a basis on which the experiment of neighborhood planning and improvement might begin.

Though believing that this suggested statute needs further refinement before being enacted into law, THE AMERICAN CITY is publishing the text in full as the most carefully considered definite proposal yet offered towards solving one of the most important and difficult of urban problems.

In a foreword to the leaflet in which the National Association of Real Estate Boards has published the redraft of the proposed Act, the Association's Executive Vice-President, Herbert U. Nelson, says:

"The important elements of family life and security of home ownership rest, in no small degree, upon the character of a neighborhood. Maintenance of neighborhood character in turn depends upon some control of land use. When stores, filling stations, billboards, and garages are permitted to come into a neighborhood of homes, unfavorable conditions arise which tend to discourage the home owner, and he leaves as soon as he can. The result is blight. It is this blight which is the prevalent disease of our American cities today. It attacks the city at the core and moves outward progressively. It threatens billions of invested wealth. It promotes decentralization, which spreads public services over increasingly vast areas at staggering costs.

"The proposal for a Neighborhood Improvement Act seeks to attack this problem of blight at the most critical point. A neighborhood is an entity hard to define but easily understood. It is not too large to be beyond comprehension of the common man. Everyone is interested in his own neighborhood. The neighborhood must, therefore, be the new unit upon which effective city planning is built. Vast city plans, general in character, do not commend the effective support of the average citizen.

"The planning of neighborhoods is a corollary to comprehensive city planning. City planning must seek to coordinate neighborhoods, as well as to determine the broad framework of the city. The proposal to plan and develop neighborhoods is not new. Every sound land developer has done these things. Because he was able to start with new land, he was able to impose the necessary controls and lay out the necessary plans through private contracts. The Neighborhood Improvement Act merely proposes to give old neighborhoods powers similar to those which new subdivisions or small suburban village governments now have.

"Mr. Harland Bartholomew of St. Louis, City Planning Consultant to the National Association of Real Estate Boards, has assisted in the formulation of this Neighborhood Improvement Act. The draftsman was Mr. Frank Watson of Purdue University. Many other persons eminent in the field of city planning and in the field of governmental activity have contributed.

"The Neighborhood Improvement Act is submitted as an enabling statute which would permit the experiment of neighborhood planning and improvement to begin."

TEXT OF THE PROPOSED NEIGHBORHOOD IMPROVEMENT ACT

SECTION 1. *Title*

This Act may hereafter be referred to as "The Neighborhood Improvement Act."

SECTION 2. *Definitions*

As used in this Act: (a) the term "city" shall mean any duly incorporated city, town or village; (b) the term "planning commission" shall refer to any officially constituted board, body, commission or committee normally charged with the duty of preparing master plans for orderly city development; (c) the term "governing body of the city" shall mean the city council, board of aldermen, city trustees, or other body having the power to pass ordinances and resolutions and to otherwise legislate concerning city affairs; (d) the term "privately owned land" shall mean all land not held by governmental bodies for public purposes.

SECTION 3. *Method of Determining Neighborhood Areas*

The planning commission of any city may, for the purpose of making the provisions of this Act available, prepare a plan of the city dividing all or part of the city into neighborhood areas in conformity with the official city plan. A report showing such division shall be presented upon request to the governing body of the city and when approved by them shall constitute the definition and boundaries of neighborhood areas for the purposes of this Act, provided, however, that no plan of neighborhood areas shall be adopted, nor shall any individual neighborhood area be defined as hereafter provided until after a public hearing in relation thereto, at which parties in interest and citizens shall have an opportunity to be heard. At least fifteen (15) days' notice of the time and place of such hearing shall be published in any official paper, or a paper of general circulation, in such municipality.

In a city where no planning commission exists the governing body of a city may adopt a plan of neighborhood areas after public notice and hearing as provided in this section. Should the governing body of any city fail to request the planning commission to prepare a plan of neighborhood areas, or should any planning commission fail to prepare and present such a plan to the governing body of the city within 60 days after having been requested to do so in writing by the governing body or by 5 per cent or more of the owners of real property within the city limits, or should the governing body of the city fail to accept such a plan within 90 days after it is presented to them, then and thereafter the owners of 25 per cent of the privately owned land in any area designated by them, may in writing signed by each of them and presented to the governing body of the city, bound and define such area as a neighborhood area within the meaning of this Act.

SECTION 4. *Creation of Neighborhood Area Development Plan*

The owners of 60 per cent of the area of privately owned land in any duly constituted neighborhood area may, in writing, present to the governing body of the city a plan for the development and restriction of such neighborhood area. Such a plan may, among other things, provide for:

(a) Zoning or rezoning
(b) Improvement and alteration of major and minor streets
(c) Parks, playgrounds and public recreational facilities
(d) Neighborhood planting and landscaping
(e) Location of all public utilities
(f) Building restrictions
(g) Progressive elimination of non-conforming uses

In cities having a planning commission, the governing body of the city shall refer such plan for the development and restriction of the neighborhood to the planning commission, which must make a report thereon to the governing body of the city within 90 days after receiving such plan. Failure to make such a report within that time shall be deemed to constitute approval of the plan. The governing body of the city may then accept or reject such plan after giving consideration to the report of the planning commission, and after public hearing and published notice as provided in Section 3 for the plan of neighborhood areas. When accepted, the plan shall constitute the official plan of the neighborhood area involved.

SECTION 5. *Publication of the Plan*

Any duly adopted neighborhood plan shall then be published by the governing body of the city by mailing a copy of such plan to each property owner residing within the affected neighborhood area, and by posting a copy of such plan in several reasonably distributed public places within such neighborhood area.

Thirty days after such publication, such plan shall become effective and shall have the full force and effect of an ordinance or resolution duly enacted by the governing body of the city. It may thereafter be amended and exceptions made to its operation by the same process by which it was adopted originally.

SECTION 6. *Appeal*

Any property owner in a neighborhood area for which a neighborhood plan has been adopted may, within one year after the publication of such plan, petition a court having jurisdiction over the property involved, to stay the execution or effect of the plan as to him. Notice of filing of such petition shall be duly served on the governing body of the city and notice thereof placed in a newspaper of common circulation in the neighborhood area involved. In the action on such petition, the official representative of the city, and any property owner in the neighborhood area involved shall be entitled to be heard. Should the court decide, after hearing, that the plan is unreasonable as to the petitioning property owner, it may issue an order restraining the operation or effect of the plan as to the petitioning property owner. The force and effect of the plan shall not otherwise be affected unless the court shall affirmatively find that so restrained, the general effect and force of the plan is so altered as to make it an undue variation of the original plan no longer able reasonably to accomplish the result sought in the original plan.

SECTION 7. *Execution of the Plan*

Restrictions and regulations as to the use of the property within the neighborhood area to which any plan applies set forth in the plan shall apply and be enforced within such area in the same manner as if contained in city ordinances.

To the extent that the plan calls for construction of improvements or condemnation of private property, the governing body of the city shall set its duly constituted machinery in motion to accomplish such improvements or condemnation in the same manner as if the city were engaging in construction of improvements or condemnation of property for any proper municipal purpose. Benefits shall be similarly assessed and collected.

SECTION 8. *Organization of Neighborhood Associations*

In order to provide an organization by which property owners in any neighborhood area may create and amend plans for neighborhood improvement and otherwise avail themselves of the rights granted in this Act, such property owners may organize themselves into a neighborhood improvement association. Such neighborhood associations shall be organized by filing with the secretary or clerk of the governing body of the city, a set of articles of organization duly signed by the owners of at least 25 per cent of the privately owned land within the neighborhood area for which the neighborhood association is being organized. Such articles of organization shall state:

(a) The name of the neighborhood improvement association
(b) The boundaries of the neighborhood area involved
(c) The names of the original officers and trustees of said association

The officers of such association shall consist of a board of trustees of five owners of real property within the neighborhood area involved and a secretary and a treasurer who shall also be owners of real property within the neighborhood area involved. Each officer and trustee shall serve for a term of one year and until his successor has been elected and qualifies. Failure of any officer or trustee to continue to own real property within the neighborhood area involved shall ipso facto disqualify said person to hold office.

Vacancies in any office may be filled at any time by special election.

Meetings shall be held at least once a year and on such other occasions as the association may agree. At all meetings of the association, each member shall be entitled to a number of votes bearing a proportion to the total number of votes set for all members which the area of land owned by him bears to the total area of the land owned by all of the members of the association.

The association may assess its members to cover the expenses of carrying on the business of the association.

The trustees of the association may, for the purposes of this Act, sign papers for and on behalf of all of the members of the association, which signatures, when accompanied by a certified copy of the minutes of the meeting of the association authorizing such signature, shall have the same force and effect as if the papers signed by the trustees were signed by each of the members of the association separately and individually.

Neighborhood Rehabilitation and the Taxpayer

By HARLAND BARTHOLOMEW
City Planner, St. Louis, Mo.

EVEN a highly efficient city administration cannot eliminate waste or excessive costs caused by improper design and arrangement of the city. American cities are notoriously over-extended—and are becoming still worse each successive year.

Taxpayers in American cities are faced with higher and higher taxes unless we can arrest needless shift of population to suburban areas and the rapid spread of blighted districts in much of the urban area. Despite numerous planning laws and zoning ordinances, our cities are characterized by widespread instability and an amazing degree of deterioration.

We all seek to escape the city. Our cities are faced with economic collapse unless large numbers of people become persuaded that areas within the city can be made fully as attractive as the suburbs—and that taxes can be kept to equally low levels as in suburban communities. The average citizen finds that he is powerless in the large city, whereas in the small suburban community he not merely feels that he has a voice in government but he can participate in the production and maintenance of a good environment for his family.

Why cannot these advantages be enjoyed by the citizens of the large city? They can be. It is a matter of organization. Citizens can participate as effectively in government and in control of environment by *neighborhoods* as by suburban communities. If our municipal officials fail to understand this simple fact, they will some day find they have cities without citizens to govern—and no taxpayers to pay the bills.

Neighborhood planning is practically an untouched field. It is an extension of planning for the whole city to the detailed planning of unit areas. It is vital not alone to the success of our larger city plans but to the very existence of our cities.

There are many methods of approach. Appropriate considerations are such things as the repair of buildings, the cleaning-up of vacant lots, the elimination of non-conforming uses or the removal of inharmonious uses of land and buildings, need for additional open spaces, sizes of neighborhood units, boundaries of neighborhood units, the closing of certain streets, the use of schools as community centers, and many other things. If we can encourage the undertaking of such things, we shall stimulate interest in the administration and planning of our cities that will lead to economy and stability where there is now waste and deterioration.

—From a discussion at the 1937 meeting of the National Association of Housing Officials.

We are now faced with the problem of arriving at a rational urban land policy which, while affording private owners and developers adequate opportunity for wise and profitable land uses, will curb the forms of speculation that prove calamitous to the investing and tax-paying public.

—From "Our Cities: Their Role in The National Economy."

Keeping abreast of
CAST IRON PIPE
THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1015 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

Incinerators for Garbage and Refuse Disposal—Part I

By H. S. HERSEY
Vice-President and General Manager, C. O. Bartlett & Snow Co.,
Cleveland, Ohio

THE practical elements involved in the design of a plant and the equipment for the destruction of such materials as garbage and rubbish are real engineering problems. They require, primarily, a thorough understanding of combustion, with special consideration given to nuisance elimination, owing to the unusual characteristics of the materials to be burned and the necessity for nuisance control. Around these fundamental requirements, there are problems for the mechanical engineer very similar to engineering required in the designing of boiler and power plants and having relation to the handling of materials in a manner calculated to effect economies in operation.

Until quite recently, the engineering of municipal incinerators has been done almost exclusively by the trained staffs of the companies specializing in this line of construction; and this can best be accounted for by the fact that incinerator construction, while continuously prosecuted over the country as a whole, was for most municipalities an isolated project, and these companies were relied upon by municipal engineers for all necessary technical service in connection therewith, because of their experience not only in the design of building and plant equipment but also in the operation of such plants.

Several companies engaged in incinerator building, having adopted designs which had been developed and found successful in England and other countries for the destruction of refuse as produced in such countries, after attempted application and use of these foreign developments, learned through experience of the changes in design and construction that were required to be made to properly incinerate refuse as produced in America.

However, it would not be surprising if engineers generally assumed an aloofness towards the problem, because of the class of material to be handled, which to many might appear offensive, although it should be apparent that it really is not objectionable to be around such plants in making a study of the materials to be destroyed or of the engineering problems involved. In modern high-temperature incineration the only objectionable odor comes from the garbage as delivered to the plant, especially if collections are infrequent. This odor, however, is only what is detected by city-dwellers, generally when collection vehicles pass one's door or are met with in traffic.

Acknowledgment

The American City is privileged to publish this group of papers on incinerators for garbage and refuse disposal, presented before the Sanitation Group, American Society of Mechanical Engineers, with permission of the authors and the Society. The papers set forth the personal opinions of the authors and represent the policies of the respective incinerator companies. William Raisch is Chairman of the Sanitation Group, American Society of Mechanical Engineers.

No Mystery in Incineration

However accounted for, it is nevertheless a fact that an air of mystery seems to have surrounded incineration engineering, even though it had relation only to data and scientific principles necessary to be understood to fully comprehend and solve the problem of incinerating city refuse without offense. This is partly attributable to the attitude of the incinerator companies and partly because the engineering profession has, until recently, been indifferent or only slightly interested. Impressions may have been created that there were special secrets vested solely in certain individuals promoting the sale of incinerators, with the effect that many engineers, while feeling that they have had the necessary training and experience to qualify them for dealing with the problems involved, have hesitated—considering that only an isolated installation was involved—to go all the way, hazarding the chance of failure because of some final touch they might not give and without which the plant might not be permitted to operate.

Until comparatively recently when inviting bids for incineration, specifications were extremely sketchy, and of drawings there were practically none; and if some "close-in" incinerator sales engineer felt that he had a reasonable chance of getting the contract, he would hesitate to disclose the finer points of the art for fear his chances for procuring the business would be lessened. In recent years,—and the art being further developed,—engineers of experience successfully applied themselves to the designing of plants and the drawing of specifications, and many such are now familiar with the operation of such plants, so that any mystery that may have surrounded the problem has been shoved to one side, with full information and data very generously furnished by the incinerator companies to interested engineers and prospective buyers of plants. Incinerator companies, I feel sure, are sincerely interested in promoting this development and are willing to assist those whose responsibility it is to make plans or draft specifications for high-temperature destruction, and have gladly given to engineers, whether employed municipally or in a consulting capacity, their judgment based upon experience, and I feel sure that those in the industry have likewise benefited by such added engineering talent applied to the

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Definitions

To permit of a better understanding of the subject it might be well to give a brief description of garbage and rubbish:

Garbage consists of refuse accumulations of animal, fruit or vegetable matter, and any matter or substances used in the preparation, cooking, dealing in or storage of meats, fowls, fruits and vegetables, originating in dwellings, hotels, restaurants, grocery stores, meat markets and public markets.

Rubbish is miscellaneous discarded refuse such as paper, straw, excelsior, rags, wood, leather, rubber, metals, bottles, tin cans, and other like waste matter from dwellings, hotels, commercial houses and public markets.

Garbage + Rubbish = Refuse

Débris from building operations, large metal refuse, such as hot-water tanks, wash-boilers, wash-tubs, bedsprings and the like, are not suitable for incineration, and should be collected separately, or separated, if brought to the incinerator, and disposed of with the ash.

Speaking very generally, there is in most cities enough combustible rubbish available for collection and delivery to the incinerator plant for the burning of the garbage without using commercial fuel. Especially is this the case in cities having large retail and wholesale establishments, many office buildings, hotels, and industrial concerns.

Still speaking generally, the proportion of garbage to rubbish produced in such cities is about 2 to 1 by weight, and the resulting mixture as charged to the incinerator furnace contains from 50 to 55 per cent moisture.

Allied Problems of Collection

The mechanics of incineration, if carried far enough, properly include the collection of material, the handling of it at the plant previous to burning, incineration proper, and the handling and final disposal of the residue. Followed through, it will be found that the complete process results in a mixture of approximately two parts by weight of garbage to one part of rubbish, being reduced to an ash residue varying from 10 to 20 per cent of the original weight of refuse delivered to the plant, and the final volume representing from 5 to 10 per cent of the original.

Time will not permit of going into all the details of collections, it being the purpose to confine this paper mainly to what happens at the plant after the material has been delivered. However, there is at least one point about the preparation of the collected material for incineration which should be considered; namely, it is desirable, from an operation standpoint, that the garbage be wrapped in newspapers before being placed in the garbage can.

Householders, after becoming adjusted to the practice, are favorably disposed, for it is demonstrable that the wrapping of garbage practically eliminates garbage odors about the house, results in cleaner cans when emptied; minimizes fly nuisance, both around the house and the collection vehicle; lessens the tendency to freeze in cold weather; and eliminates dripping of the sour garbage water from these vehicles if they are not watertight. The wrapping of garbage, to a great extent, assures that the refuse with adequate combustible content will be delivered to the plant in condition best suited for completing the burning process without additional fuel. Further, the cost of collection is lessened when garbage and rubbish so wrapped are collected and delivered to the incinerator at the same time and by the same vehicle.

In some cities where there is collected an excess of rubbish over that required for the burning operation, it may occasionally be found desirable to collect the garbage separately from the rubbish, so as to permit of salvaging operations for the recovery of such materials as metals, bottles, rags, and the excess paper materials.

In plant design it is therefore necessary to study methods and equipment employed in collection, especially nowadays with large collection vehicles, and the need for ample clearances for them. In this connection, it is essential to know whether trucks and/or trailers will be employed, and whether the trucks are designed for a combined collection of garbage and rubbish or for handling garbage and rubbish separately; as in the latter case it is frequently found that for collecting rubbish only, the vehicles are quite high and long.

Most plants carefully record the weights of material as delivered to the plant, and sometimes the classification of such materials, in order that costs on a tonnage basis, for the collection and/or disposal of all materials delivered to the plant, may be analyzed and interpreted.

Design Problems

No fixed design of plant fits all conditions; the topography of the ground, for example, may present conditions which must be met, as in the case of hillside-sites where it is frequently found that economies result from a design which permits material to be dumped onto a receiving floor from a higher elevation, and from manual charging of the material to the furnaces, or in the larger plants from the employment of cranes for this purpose. Sometimes, in hillside-plants, a refuse bin with crane and grab-bucket operation may be found desirable, for it is then possible to store the necessary refuse for full-time operation with less height required than would be the case if all refuse were stored on a receiving floor.

Further, there are innumerable communities, all having refuse-disposal problems, but which, because of their smallness, and the consequent limited tonnage, would indicate truck-to-furnace type of plant. In this type of plant, wherein the material is discharged directly into the furnace from the collection vehicle, furnace capacity should be large enough to keep up with the rate of delivery of mixed refuse. These plants are seldom operated continuously during 24 hours, and rarely have storage facilities adequate for such operations.

Definition of Discussion

It is very important to analyze all plant details and functioning units so as to determine whether there is furnace or plant capacity equal to the demands that will be made upon it. I will endeavor to confine my further remarks as applying to an incinerating plant without boiler plant or salvaging facilities, and having a truck receiving floor and a refuse bin adjacent thereto, into which the trucks dump the mixed refuse, and, by means of a grab-

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bucket, the refuse is brought to the high point of the plant, where it is dropped into receiving hoppers, after which in subsequent operations the material finally gravitates into the hopper provided for the residual ash from the burning operation.

Construction and operating features will have reference to those plants disposing of mixed refuse by incineration, using a mutually assistant type of furnace, having a brick setting encased in steel, with multiple cells adjacent to each other and with provision made so as to permit of operating each cell independently if required.

First, let me state that for such a plant it seems to me desirable from the viewpoint of facilitating vehicle travel and maneuvering, as well as ash removal, to have a "drive through" plant. Upon arrival at the plant, weighing-in takes place, and when this is concluded, the vehicle enters the receiving building and does not back travel after discharging the refuse in the bin.

I will now take you on a tour of inspection of such a plant, and will endeavor to explain features of building details, as well as furnace and functioning units, and will bring out what in my judgment are essentials in plant design for satisfactory operation.

Receiving Building

Consideration should be given in the design of the receiving building so that backing in and dumping of the refuse from the vehicles, as well as ingress and egress, may be accomplished with least possible interference and delay. In most cases there is an advantage in having the entrance way to the plant close to the dump-pit so as to allow sufficient area for turning the vehicle to the position necessary for backing to the dump block of the pit; the exit might be considered as best located if farther away from the refuse pit, permitting the vehicles to swing out from the dumping position to the most remote travel line, as at times it is necessary for vehicles to pass in front of others which are either maneuvering to the backing position or being dumped. Such receiving buildings, if made 50 feet in width, permit of considerable maneuvering of the trucks; however, if trucks are excessively long, a building somewhat wider has further advantages. Some buildings have less width than 50 feet because relatively small vehicles are used for collections; others, because of lack of available ground area for the plant, or perhaps the lack of sufficient money for a larger building.

In adopting the wider building there is a speeding-up of the turn-around time of the vehicles while at the plant, which permits more time on the road for collecting. Adequate clearance of doors or beams should be considered, and in the cities employing the high or long-bodied type trucks, 18 to 20-foot clearance is not too much. This has the advantage, when carried through to the clearance line over the dumping block of the refuse pit, of insuring that any truck-body in its highest elevated position will not meet with interference. To some it may appear that there is quite an attendant higher building cost for such a clearance; however, as the clearance over the dumping block is raised, a lesser amount of masonry wall and steel work at that point is required for the supporting beams or trusses. The amount of masonry saved at this point represents the equivalent of that added to the outer wall of the receiving building wall in providing such clearance. If we consider further that seldom is the receiving building heated, and rarely is it ever necessary that it be, there is no added operating expense incurred because of the increased volume of the building.

The receiving building may provide facilities for housing collection vehicles, and it might be practical to have additional garage space underneath it, in this way concentrating at a public works department site the collection equipment, complete with facilities for maintenance and washing. Such facilities can thus be provided for a relatively small additional expenditure.

Refuse Bin

The capacity of the bin must be considered in the light of the delivery period of material to the plant; for instance, it is quite usual that deliveries are completed in eight hours. This makes it necessary that there be sufficient bin capacity to cover the period of 16 hours when no deliveries are being made, if it is intended that the plant be designed to operate on a 24-hour basis.

Considering that the grab-bucket is at all times being employed handling refuse, the frequent dropping and closing of the bucket packs the refuse, and this, together with the added weight piled into the bin, materially reduces the original volume, so that if the size of the bin is determined from the average weight per cubic yard of material as received and figured water-level full to the top of the dumping block, further provision for storage will not be required.

The width of the bin if not in excess of 20 feet will be found to be practical, although it is not infrequent that additional storage capacity is provided through an undercutting of about 4 feet back from the dumping block. If it so happens that the refuse does not readily flow to fill back level for the full 20-foot width, it may be readily handled by the crane when not raising material to the charging hoppers.

The bumping of the grab-bucket requires that the bin surfaces be protected. Rails are used in the bottom of the bin, and steel plates on the other surfaces, although at times rails or tee iron are used throughout.

Windows are sometimes placed in the bin wall next to the furnace room or stoking area, and these may also be protected by the use of rails.

Drains should be provided in the bottom of the bin for draining off free water, as well as wash water used in cleaning the bin at the end of burning operations.

Main Building

The building for the housing of furnaces, combustion chambers, preheaters, flues and expansion chambers is usually constructed of brick walls, steel beams and concrete floors; it is possible to use the high wall of the refuse storage bin as one of the enclosure walls of the furnace room. Plants have been designed economizing in the use of structural steel by eliminating steel columns in the refuse bin and other walls, depending on wall bearing for floor beams and/or trusses; with such construction there is a very noticeable delay in the completion of the plant, for it is not found that much if any saving in time is made if furnace construction is commenced before the floors and roofs are completed.

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completion of the building masonry and concrete work, allowing the roofing to be promptly applied and the building to be in best condition for rapidly constructing the furnaces.

Cranes

Electrically operated cranes having four motors are usually employed, one motor each for closing, lifting, trolley and bridge travel. Seldom is it necessary to use clam-shell buckets in excess of 1½ yards, except, however, in the larger plants, where they may be found to be 2 yards. Cranes rated at 3½ tons capacity are usually specified for 1½-yard bucket operations, and 5-ton for the 2-yard. At times the material being handled is rather light, and at other times heavy and difficult of operation. The bucket, therefore, should be of such design as to facilitate digging into the material, and this is best accomplished if the sides of the bucket are cut back so as to minimize the compression of the material between the closing edges.

At the speeds usually employed for such crane operations, a 1½-yard bucket can readily handle 450 tons of mixed refuse per 24 hours. Two cranes are usually installed, and in some plants both cranes are in use, whereas in others the second crane is a spare. The crane runway should be of such length that if two cranes are installed, either crane, when not in use, can be parked, permitting the operating crane to serve the last opening to the furnaces at the extreme ends of the incinerator plant.

Charging Containers

The refuse, having been raised by the grab-bucket to the charging floor, is dropped into steel or concrete charging hoppers located over the charging containers. It should not be expected that these hoppers will cause the material to flow into the charging containers; rather, it should be handled thereto by manual assistance; in fact, I think it better that the hopper's sloped surfaces be flatter than those usually employed, in order that any surcharge in the hopper may not flow into the charging container and through this into the furnace when the charging machine is operated.

It is usual for one man to be employed at each charging hopper, and no additional expense is involved in keeping him more frequently employed. The hopper should be wide enough so that the grab-bucket contents do not spread onto the charging floor proper, and the crane operator should be instructed not to pile excessive quantities of refuse above the charging container openings. When there is a pile-up at this point, even with relatively flat sloped aprons on the hopper, there is the possibility that too large a quantity will be charged for best furnace operation.

The construction of the hopper between the charging container openings might well be limited to a low inverted V-shaped division apron, which would permit of cleanliness of operation and make it relatively easy for the operator to direct the material to the opening, but require that this be done manually.

For these reasons, I do not advocate symmetrical, four-sided hoppers, except in the case of hoppers used for charging certain furnaces, which, owing to their peculiar construction, can properly be charged with large quantities at a time without adversely affecting combustion.

If the hopper has uniform slopes on the aprons and is four-sided, there is a tendency toward arching of the material above the charging container opening.

With the type which I have indicated as being preferable, it is easy to select the material being charged to the containers, picking out anything that need not or should not be passed through the furnace, and thereby assuring that such material as is placed in the container will be readily discharged when dropped into the furnace. The raking of the material to the container reduces any matting that has taken place, and burning is more readily accomplished. Under these conditions arching seldom occurs, but if it does, the man charging may not be aware of it, and the stoker, failing to have the charge dropped when he next opens the charging container gate, is not interested (being human) in increasing his personal effort by notifying the charging operator of the failure of a charge to come through.

The elevation of the charging container top should be 1½ to 2 inches above the charging floor, and the cement finish thereto should be sloped away in order that the charging floor may be washed readily without the wash-water passing into the furnace.

The charging container should be considered primarily as a measuring device for the quantity of material delivered to the furnace at each respective charge. The size of opening at the top should be less than at the bottom in order that anything put into the container may readily drop to the furnace.

Occasionally, charging containers are made with too large openings and hold too large a charge. The fundamentals of good combustion favor more frequent but smaller charges. A volume of one cubic yard and even slightly less will usually be found to be preferable. The opening in the charging container at the charging-floor level should be such as will not admit excessively large pieces, which, if admitted, would interfere with stoking operations. It is also advisable that the opening in the furnace arch be not too great, as it is necessary to have sufficient masonry work and adequate supporting steel between the openings in the arch, and also there must be sufficient room around the sides of each charging container gate on the top of the furnace so that proper care may be taken of moving parts, with conveniences available for maintenance and necessary repairs.

The charging operator should be instructed not to force into the charging container any large-size pieces unless they are of the non-expanding type. Pieces which are too long to drop clear may stick up into the line of travel of the container-gate and prevent its closing. If maximum capacity and high and uniform temperatures are to be obtained from the furnace operation, it will be found that such rules must be established, and, as a result, the work of stoking will be more readily and willingly accomplished by the operator, and he will have better control of his fires.

Relatively small charges, providing the opening of the furnace is properly set with relation to the grates, will be found to produce a pile within the furnace which does not reach to the arch and is largely against the back of the furnace and can be readily stoked onto the burning grates. It is advisable to limit the height of the pile on the drying hearth to prevent smothering the fires on the burning grate.

The gate-operating mechanism on the charging machine

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may be of several different types, operated either manually, electrically, or by compressed air or other fluid. The gate is most frequently constructed as a cast iron frame, refractory lined, presenting a complete seal of the opening to the furnace when closed. There should be provisions so that the contents of the charging container will drop directly into the furnace without scattering onto the hot surfaces of the furnace top.

Manually operated gates which are controlled by the stoker are satisfactory. However, since this type requires human effort, there is a tendency not to charge the furnace as frequently as should be. Any of the other types mentioned will be found to be satisfactory. The air-operated gates, however, require air compressors and piping for the air, with air-receiver tanks and cooling water connections, consuming electric power continuously through the operating period. The electrically operated gate has proved satisfactory, has all the advantages of those air-operated, and in addition consumes electric current only as each charge is made to the furnace. Charging container gates should be opened as quickly as possible and promptly closed when the charge has been dropped, in order to limit the leakage of air into the furnace.

(To be continued in the March issue)

Flushing Vicksburg's Paved Streets

Business Streets Cleaned Daily, Residential Three Times Weekly

THE 30 miles of paved streets in Vicksburg, Miss., the city host to thousands who each year visit the great National Park and memorials to the soldiers from many states who gave up their lives in attacking or defending Vicksburg during its siege in 1863, are maintained in as cleanly a condition as those of any city ten times its size in the entire United States. Each day the Etnyre 1,500-gallon power flusher, mounted on a 5-ton General Motors chassis, flushes the business streets, and three times each week every residential street is similarly washed by high-pressure streams of water from the big machine. The wide streets of Vicksburg make the use of the flusher particularly effective, as do the hills. The water carries all the débris quickly from the street to the gutters, where little of it is deposited in the sewer catch-basins but most of it remains in the gutters until the pair of pick-up carts comes along and the driver brooms up the material into piles and shovels it to the mule-drawn carts. These mule carts are the sole remnant of mule power for all hauling purposes in Vicksburg. They have survived modernization and being replaced by trucks, for speed is not required and the mules make it possible to do the work with a driver alone, whereas with a truck on either side of the street two drivers and two sweepers would be required.

The present flusher was purchased in 1936 and is the third generation of Etnyre flushers purchased by the city. The first was bought in December, 1915, mounted on a Federal truck; the second in 1924, mounted on a Kelly-Springfield truck; and the present flusher in 1936. This has been equipped with hose so that it may be used for fighting suburban fires in Warren County. There are many calls for such assistance, and the 1,500-gallon capacity of the tank "can put out a lot of fire."

The 1937 street-cleaning budget is $16,000, with which it was expected that some additional equipment would be purchased, namely, two trucks to follow the flusher; but, for the reasons stated above, this extra equipment will not be bought and that saving will be effected in the budget. This is a habit of the present administration of the city which has shown in the past four years a reduction in the cost of running practically all departments and has given greater service for the tax dollar, reduced the assessment on all property 10 per cent, and reduced the tax rate 12 per cent.

The street-cleaning activities are under the direction of J. M. Buchanan, President of the Board of Aldermen of Vicksburg.

THE THIRD GENERATION OF ETNYRE POWER FLUSHERS OWNED BY THE CITY OF VICKSBURG, MISS.

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HERE is another case of a thriving small community that has swung over to concrete—100%—for its street paving program.

During 1936 and 1937, Escanaba, Michigan, paved 75 blocks of residential streets with concrete. Petitions have come in for many blocks more to be built in 1938.

There's no mystery about the popularity of concrete. Drivers, property owners, taxpayers, all have good reason to like it. It's a satisfying, safe pavement that is non-skid, wet or dry; that is free from humps, ruts and mud. It's economical because it costs less to build than other pavements of equal load-carrying capacity, and costs far less to maintain. Moreover, concrete can save up to 30% on street lighting costs, or permits better lighting for the same money.

For economy, safety and satisfaction, pave your streets with concrete.

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A National Organization to Improve and Extend the Uses of Concrete

The More Concrete the Less Street Maintenance

The Small City and Town Become Industry-Conscious—Part II

By ASA S. KNOWLES
Head, Department of Industrial Engineering, Northeastern University

This article is based upon a thesis project prepared for the New England Council in 1936-37, by Warren Ganong, under the supervision of the author.

(Continued from the January issue)

The Industrial Development Program with Reference to the Particular Community

Now let's turn our attention to the setting-up of the program itself. First, an industrial survey of the community must be made. The result of the survey must be an impartial presentation of the good and the bad points of the town from an industrial viewpoint. This will include a description of the products being made in the community, where they are sold, banking facilities, labor supply available, etc. These may be grouped in three classifications:

1. Advantages inherent in the locality itself. Here would be found such items as raw-material supply, climate, topography, characteristics of the people, water supply, location of markets, proximity of parent companies, and so on.
2. The advantages arising out of the public attitude—low taxes, subsidization, living conditions, and the like.
3. Miscellaneous advantages such as trained labor, available factory buildings, industries to supply raw material, banking facilities, and so forth.

These claims must in no way be misleading; they must be actual advantages which the community can offer without conditions. Furthermore, the community must strive to present them in their proper light and so that the relative importance of each may be realized.

TABLE I—PLANT LOCATION FACTORS EMPHASIZED BY SMALL TOWNS IN NEW ENGLAND

Location Factors	Number of Towns
1. Transportation facilities	42
2. Labor supply	40
3. Power and fuel supply	40
4. Living conditions	37
5. Banking facilities	36
6. Nearness to markets	30
7. Available factory buildings	28
8. Renting arrangements	28
9. Other industries in locality	26
10. Cheap land	21
11. Taxes	20
12. Raw material supply	12
13. Financial aid available	7
14. Near parent companies	5

Source: Information obtained from and compiled on the basis of questionnaires distributed by the Department of Industrial Engineering, Northeastern University, 1936-37.

TABLE II—REASONS FOR PLANT LOCATIONS IN NEW ENGLAND*

Reasons	Relative Importance
Labor	1
Available buildings	2
Markets	3
Transportation	4
Materials	5
Near related industries	6
Personal reasons	7
Power and fuel	8
Living conditions	
Financial aid	
Taxes	
Mergers	

* "Industrial Development for a Community," Metropolitan Life Insurance Co., Table I, Page 12.

The factors that small New England towns have stressed to attract industry are shown in Table I. This table becomes even more interesting when contrasted with material compiled by the Metropolitan Life Insurance Co. to show what factors industry stresses in seeking locations. (See Table II.)

It would appear that many New England small towns might do well to examine industry's needs before launching a program.

Limitations to Be Placed upon the Development Program

There is a limit to the size and type of industry suited to a given town. A small town cannot hope to support a large industry. The problems of providing a labor supply, sewage disposal, public utility services, etc., for a large industry are too great for a small town to handle. Examples are too numerous where over-ambitious towns have been obliged to redesign their sewage or water system to accommodate a large plant constructed in the town without the necessary foresight.

In order to lessen the possibility of such an occurrence, the question "Can we afford it?" should be asked before a town accepts the responsibilities of an added plant. A satisfactory answer to this question will mean that neither the community nor the industry is deceiving the other. E. B. Besselievre says, in the article by him previously referred to:

"There is a place for every industrial plant where it may expand and develop to the best advantage in accord with its needs and possibilities, and where its expansion or location will not impose uneconomic or undue burdens on anyone. Selective distribution of industrial plants, with a view to the greatest good to the greatest number and with the economic interest of each party in mind, will produce more satisfactory results than can be the case where plants are allowed to locate without check or supervision."

Promoting the Development Program

There are relatively few methods employed by communities in their industry-seeking programs. The following, arranged in relation to the extent of their use by the small communities studied, ought to be fairly representative of the country as a whole.[1]

1. Following up leads supplied by local organizations
2. Direct mail advertising
3. Following up leads supplied by products sold in the community by outside industries
4. Community advertising in newspapers and periodicals
5. Other methods. (See Chart 2 on next page.)

[1] Result of questionnaire.

THE THRIFT CARRIERS FOR THE NATION

NEW 1938 CHEVROLET TRUCKS

CHEVROLET

FOUR GREAT LINES

of half-ton, ¾-ton, 1-ton and 1½-ton trucks . . . 5 wheelbase lengths . . . with a wide variety of models to suit your haulage needs . . . all of them big, rugged, dependable truck units with Valve-in-Head Engines, Perfected Hydraulic Brakes and Extra Sturdy Frames . . . designed and built to give you more miles of service at lowest cost per mile.

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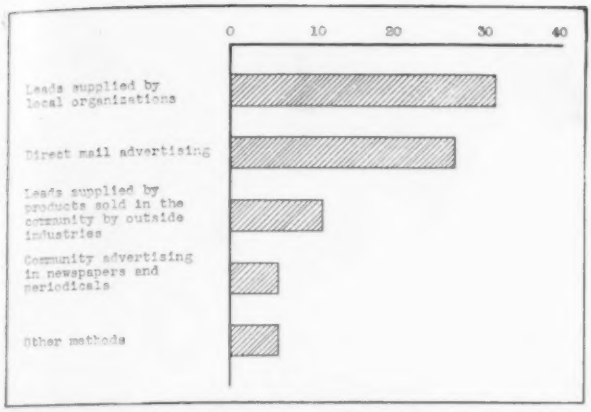

CHART II.—METHODS USED BY SMALL NEW ENGLAND COMMUNITIES IN THE ATTEMPT TO SECURE INDUSTRIES

Promotion Through Advertising

The setting-up of the advertising plan is a crucial step in the development program, for here its success or failure is decided. If the program is designed to expand existing industries, the advertising factor, of course, is not so important. But for programs constructed to *attract* industries, whether new, established, or branch plants, the significance of advertising cannot be overestimated.

Community advertising is usually one of two types: it employs either the "shotgun method," as Walter W. Pace puts it[5], or the "rifle-shot method." The former operates on the principle that missiles scattered over a wide area should hit at least one likely prospect. As a general thing, this proves an unsatisfactory and unprofitable type. Note the uncomplimentary fourth position of "community advertising in newspapers and periodicals" in the above list. The cities of Atlanta, Ga., and Dallas, Texas, however, have reported that nation-wide advertising campaigns have proved profitable. But their testimony is not strictly comparable, since they fall into the category of large cities.

The "rifle-shot method," as would be expected, aims its fire at a definite target. It is not a hit-or-miss method. The advertising is directed at one industry, or group of industries, and is planned to present the community's advantages in respect to this industry. This is no doubt the more dependable of the two types used, for it eliminates the uncertainty and the waste attendant on the former. A second advantage is that of being presented in definite and not general terms. That is, it presents the benefits of the community to a tangible, known subject, thus allowing the use of a specific sales talk. The popularity of this method is indicated by the position of "direct mail advertising" in the foregoing classification.

The Auxiliary Facilities for Industrial Development

In conjunction with advertising as a means of giving life to the development plan, use should be made of personal contacts with representatives of interested or prospective firms, and the cooperation of other promotional bodies should be solicited.

New England communities are fortunate in having at their disposal the assistance of the New England Council, state development commissions, and planning boards whose purposes are to assist in the industrial development of the New England states. Furthermore, local bodies such as chambers of commerce, boards of trade, industrial boards, etc., are often helpful.

A pertinent example is found in Cambridge, Mass., where the Kendall Square Industrial Association exists to bring together the manufacturers of that district for the purpose of discussing common problems pertaining to management, growth, development, and service. The success of a development program can be greatly enhanced by securing the interest and backing of such a body. The interest and cooperation of both local real estate agents and real estate associations should be obtained with little difficulty, for it is to their own advantage to help along the program. Often such people can offer constructive suggestions and through their own advertising efforts bear part of the promotional expense.

Cost Determination

In any town which is likely to undertake an industrial development program, the amount of money expended must be kept at a minimum. The community need for industry is the first factor to consider when deciding upon the actual amount to be appropriated. A recent case in point is that of Manchester, N. H., where the principal industry of the city closed its doors with the intention of never reopening them. Here, drastic need became imminent suddenly, and local citizens took steps successfully to save and utilize the Amoskeag properties for Manchester.

The next determining factor is the ability of the town to appropriate the necessary funds. Not long ago one Massachusetts city could not have raised a penny for any purpose, despite its need for a live program to help replace disappearing industries.

In the third place, the community undertaking the program must examine carefully its field of exploitation before attempting the campaign. The money necessary to put over the campaign should be available, and the amount expended by other towns in a similar situation should be carefully reviewed. This will give some basis for arriving at logical expense figures. The cost of operating development programs in New England communities has varied enormously. (See Table III.) In Turners Falls, Mass., there is no appreciable cost to the town, since local men are back of the program. Marlboro, Mass., on the other hand, expended $18,000 in 1936 for industrial development. Thus it is evident that each town must decide for itself how pretentious a program it is able to undertake.

TABLE III—TABLE SHOWING EXPENDITURES FOR DEVELOPMENT BY SMALL TOWNS

Amesbury, Mass.	$2,000
Augusta, Maine	10,000 to date. No annual cost
Beverly, Mass.	1,500
Biddeford, Maine	No cost
Braintree, Mass.	Very small
Danvers, Mass.	No cost. Services of local men free
Derby, Conn.	No cost
Marlboro, Mass.	18,000 for 1936
Norwalk, Conn.	2,000 per year
Old Town, Maine	1,500
Rochester, N. H.	30,000 to date
Stevens Point, Wis.	40,000
St. Johnsbury, Vt	500 per year. Included in C. of C. budget
Turners Falls, Mass.	No cost, local men back of program
Walpole, Mass.	No cost, few men have worked individually
Waterville, Maine	500 for 1936
Willimantic, Conn.	3,500

Source: Information obtained from and compiled on the basis of questionnaires distributed by the Department of Industrial Engineering, Northeastern University, 1936-37.

[5] *Review of Reviews*, November, 1932, page 70.

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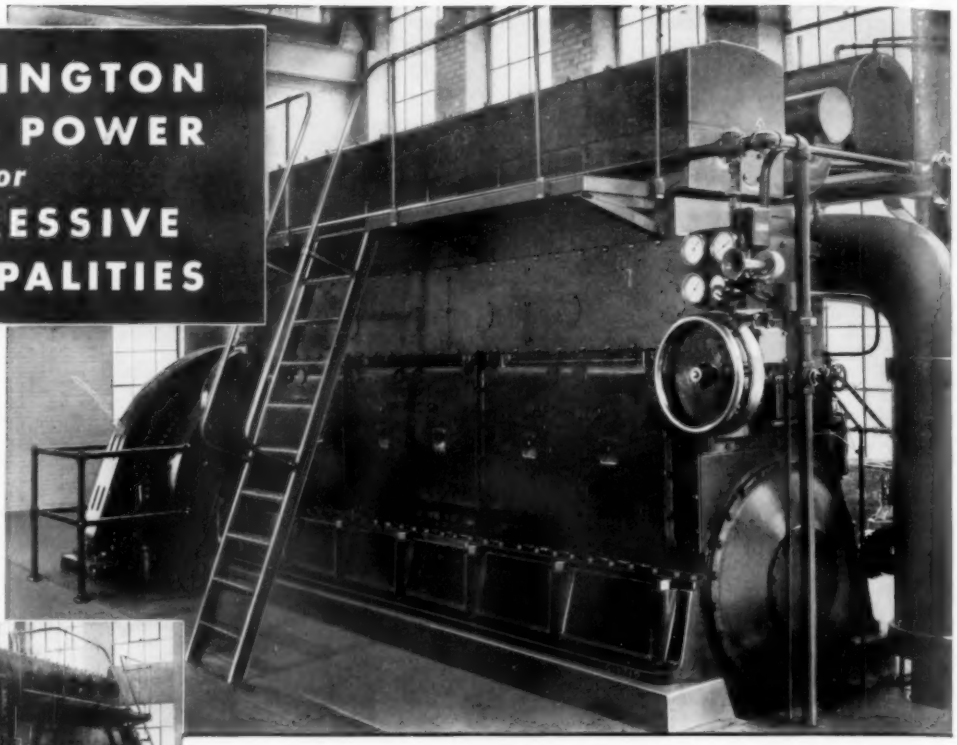
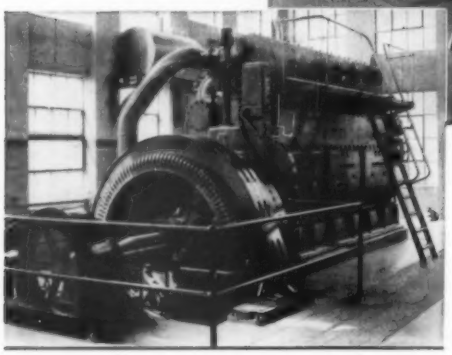
DIESEL ENGINES
50 to 1500 hp.
Every type of drive





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TO accomplish further economies in their power facilities, many forward-looking municipalities have selected Worthington Diesels, after thorough investigation had brought out convincing records of their maintained economy.

WORTHINGTON engines are built for continuous operation at medium speeds. A complete line provides the correct unit for every individual condition . . . and Worthington air compressors for starting, rotary pumps for fuel transfer, and centrifugal pumps for jacket cooling, give additional service security through the undivided responsibility of one maker.

WORTHINGTON PUMP AND MACHINERY CORPORATION

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ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

D68-4

Finally, before undertaking its program, the community must settle the question of the advisability of going ahead; that is, it must decide whether or not it is really adapted to industrial purposes. Both Winthrop and Lexington, Mass., for example, feel that their futures lie in serving Boston as "bedrooms." The small town located far from convenient transportation facilities could not place much faith in a development program, be it good or bad. Nor could a town offering poor educational and recreational facilities—factors determining the "livableness" of the community—hope to realize much success. In short, the community must believe in itself, and have grounds for that faith.

Does a Development Program Justify Its Cost?

Admitting now that the cost of a worth-while development effort is great, is it justified? If in the end the expenditure does result in lasting benefits to the community, no further justification is needed. St. Louis, after having spent $270,000 upon a five-year advertising campaign, reported 51 new industries showing a yearly return in taxes of $200,000. The Atlanta campaign, already mentioned, cost the city $250,000 and resulted in 165 new concerns with an annual payroll of $7,000,000. These large cities demonstrate that in their cases a sound industrial development program did pay.

The small communities of New England which have carried on programs have been similarly satisfied with the results. With the experience of these towns as evidence of the value of planned industrial development efforts, the adoption by other communities of similar well-conceived programs, based on a common sense attitude, may be expected.

Under the present system, competing communities wage a "battle for the smokestacks."[1] Each is grabbing what it can get; if it can seduce an industry from a neighboring community by offering lower taxes, or what not, all well and good. That community, on the other hand, may be doing its best to convince an industry of the former town of *its* superior advantages. So it goes. The waste of time, energy, and money is obvious. Still the shuttling back and forth of small industries continues, to the dubious betterment of the towns concerned.

As a remedy to this unhappy situation, it would be a move in the right direction to create a new specialist, a coordinator of industrial development activity. His job would be to see to it that each community builds its development program about some natural advantage which would not conflict with that of a nearby community, or on exceptional advantages resulting from wise municipal expenditures—fine schools, parks and playgrounds, adequate fire and police protection, efficient public health service, and the rest. This should not be a difficult task, for each community has its own peculiar advantages and disadvantages which distinguish it from others. It is for the best interests of each community that some guidance be provided to eliminate the duplication of effort and wasteful competition so prevalent today. Here is a new and worthwhile opportunity for communities attempting industrial development and they will do well to either employ or seek the counsel of engineers and others who comprehend the relationship of industry and the community.

[1] Merle Thorpe: "Battle of the Cities for Smokestacks." THE AMERICAN CITY, March, 1930, page 95.

A Comment on the Foregoing Article

To the Editor of THE AMERICAN CITY:

Thank you for sending me the proofs of the interesting analysis by Messrs. Knowles and Ganong of the current practices by communities in endeavoring to get industries to locate within their boundaries. I am glad that they have pointed out that there is today a definite tendency away from the practice of offering "inducements" in order to attract industries to a community, and also that "there is a limit to the size and type of industry suited to a given town."

The quotation from the statement by E. B. Besselievre emphasizes the point that I should like to reinforce—that is, that certain kinds of industries may be a financial asset in a certain type of community; while in another type they may conceivably be a financial liability. Most efforts to secure industries appear to conceive that any industry will be an asset to a community. In my opinion this is not correct, and the fact would be made clear if the community were looked upon as a corporation organized for the purpose of producing community services, and the industry and the families of its employees were grouped together as a unit buying services from the municipality through the payment of taxes.

Studies made in Boston indicate that all the families of modest income cost a community far more than they provide in taxes. It also shows that only six of the fifteen industrial census tracts produced in taxes more than enough to pay their service charges, and that all fifteen industrial tracts show a net cost to the city of about half a million dollars over and above the taxes produced. These studies indicate that industries of low taxable values per employee and low average annual earnings by the employees are a liability to a large metropolitan community where service costs are high and partial subsistence off the ground is impossible. Other conditions may make it desirable for some such industries to exist in such communities, but the fact that they are a liability on the financial statement of the city appears to be established.

I am interested also in the statement that "the small town located far from convenient transportation facilities could not place much faith in a development program, be it good or bad." Interesting examples exist in New England of small branch plants definitely located in small rural communities as a supplement to the farming activities, to advantage both of the community and the branch plant, where the plant is carefully devised in relation to the community needs.

In view of the above comments, the analysis in the article of whether a development program justifies its cost is not completely answered by a statement of the figures given in the article. The character of the payroll and the cost of providing schooling, welfare, and other municipal services to the families of the employees in the factories that have been secured, must be given consideration, as also the question of whether the industries are employing entirely existing members of a community or are bringing into the community, for their employees, new families. It might be better for a community to arrange for the location of what might be called a "marginal" industry in a neighboring community and the transference of some of its population to that community, thus relieving itself of the costs involved in servicing these families if they are of one of the low-rental groups.

That the matter is a very complicated one is indicated by Messrs. Knowles and Ganong. It seems to me there are, however, still further complications, as suggested above, which have not been given much consideration by anybody.

WILLIAM STANLEY PARKER.

Boston, Mass.

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Supreme Court Aids Public in Utility Rate Controversy

By H. M. OLMSTED
Consulting Engineer, Illinois Commerce Commission

THREE important decisions bearing on public utility rate regulation were announced by the United States Supreme Court on January 3. They were in the cases of *Railroad Commission of California* v. *Pacific Gas & Electric Co.*, *McCart et al.* v. *Indianapolis Water Co.*, and *Alabama Power Co.* v. *Ickes et al.* The first two are concerned with the basis of valuation for public utilities. The decision in the first case shows a leaning toward actual investment as the basis, although it does not decide that point at all definitely; the second does not directly involve the investment basis, but serves to illustrate the impracticable character of reproduction cost as a basis for rate making. The third case is not directly concerned with rates or valuations, but may materially affect both.

The decision in the *Pacific Gas* case had been awaited with special interest because that case had helped to focus attention on the proposition that prudent, actual investment, and not estimated and hypothetical reproduction cost, should determine the rate base, or property value, upon which a fair percentage or rate of return is allowed to be earned from the rates authorized. The investment basis has been advocated by various outstanding authorities, especially on the public's side of the utility rate controversy; it has on several occasions received the approval of President Roosevelt, and recently, in a guarded way, of Wendell L. Willkie, President of the Commonwealth & Southern Corporation, one of the largest public utility holding companies; and the Federal Power Commission, in a brief to the Supreme Court in the *Pacific Gas* case, supplementing the brief of the California Railroad Commission, strongly advocated the adoption of the prudent investment rate base. The California Commission in 1933 had practically taken such a rate base in considering gas rates of the Pacific Company. The Company presented estimates of reproduction cost; the Commission considered these, but severely criticized them and gave them little if any weight. It ordered a rate reduction amounting to $2,100,000 per annum. The Company claimed that the Commission's treatment of its evidence on reproduction cost constituted denial of due process of law as guaranteed by the Constitution, and that the rates were confiscatory—although shortly after a decision in its favor by a Federal Court the Company voluntarily instituted a rate reduction $400,000 larger than the one ordered by the Commission. The Federal Court did not decide the question of confiscation, but granted an injunction on the grounds of denial of due process of law.

The case had reached the Supreme Court once and the lower court had been sustained, without an opinion, by an equally divided vote (4 to 4). Reargument was permitted, however. The present decision, by a 6 to 2 vote, is to the effect that due process of law had not been denied the Company, but that the District Court should have decided the question as to whether the ordered rates were so low as to produce confiscation of the Company's property. The case was accordingly remanded to the lower court. Hence, no definite decision on the sufficiency of prudent investment as a rate base was made; but not only does the Court's opinion, by Chief Justice Hughes, indicate that the Commission was not necessarily in error in attaching little if any weight to the Company's reproduction cost estimates, but it also implies that the adoption of prudent investment as the rate base may have been justified in this case, though not in all cases.

Progress Towards a Stable, Practicable Rate Base

The case may be considered as indicating further progress toward a stable, practicable rate base, and toward a recognition of the propositions that a public utility can have no ascertainable value apart from the rates which make it valuable, and that therefore the question of a rate base is one of public policy and ease of administration. The change in attitude is emphasized by the dissenting opinion of Justice Butler. The case is also important because the Court has receded from its position in *West* v. *Chesapeake & Potomac Telephone Co.* (1935), 295 U. S. 662, where it decided against a rate reduction order of the Maryland Public Service Commission, on account of the valuation method employed and not because of the result.

The *Indianapolis Water* case arose from an order of the Indiana Public Service Commission in 1932, reducing the rates of the Company, which contested the order before a Federal District Court. The report of a special master appointed to take evidence held against the Company, as did also the District Judge's decision. On appeal to the Circuit Court, however, the District Judge was reversed on the ground that he had taken the value as of April 1, 1933, although there had been "a constant and definite trend upward in commodity values," according to the Circuit Court, from that date to the date of the Judge's decision (Nov. 29, 1935). The reduced rates have remained in effect, as the Company did not seek a permanent injunction. The Supreme Court held with the Circuit Court, but in remanding the case to the District Court for a rehearing to determine whether experience with the rates had proven them to be confiscatory, it was emphasized that "all questions pertinent to the issue of confiscation should be open."

The case is particularly notable for the vigorous dissenting opinion of Justice Black, who recommended that the District Judge be sustained, or else that the case be dismissed for lack of jurisdiction, on the ground that confiscation had not been shown and the Federal courts had no further place in the picture. He pointed out that the

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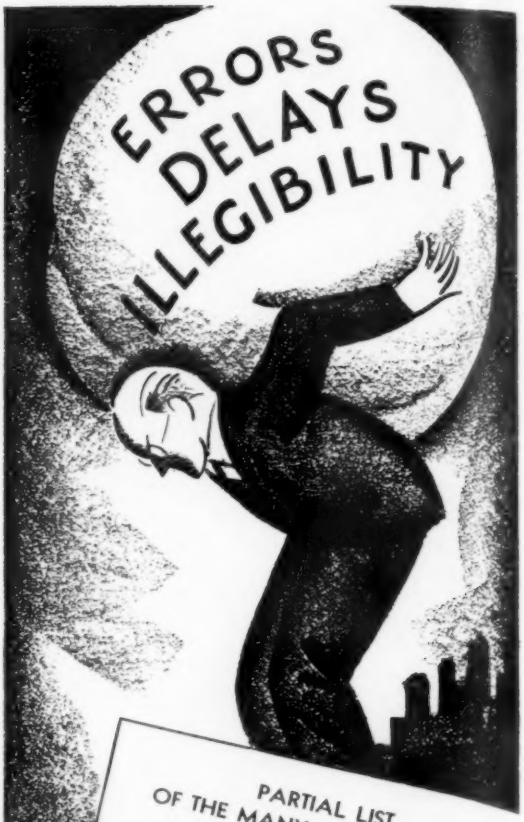

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TAX OFFICES—Tax duplicates, assessment rolls. Bills, delinquent notices. Other single or continuous forms.

UTILITY DEPARTMENTS—Water, gas, electric bills. Meter readers' books, ledger and other forms.

LICENSE BUREAUS—Licenses, application forms. Envelope addressing.

VOTERS' REGISTRATION BUREAUS—Voters' registration lists. Sample ballots and other forms.

STREET DEPARTMENTS—Garbage collecting, snow removal, street cleaning control.

PAYROLL DEPARTMENTS—All payroll forms such as checks, lists, records, reports and receipts.

RELIEF OFFICES—Relief lists. Food and fuel orders. Other welfare and relief forms.

STORES DEPARTMENTS—Inventory records, requisitions and reports.

POLICE DEPARTMENTS—Reports of thefts, notices of criminals, reward bulletins and other forms for distribution.

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Sales Agencies in All Principal Cities

valuation was based on reproduction cost appraisals, and that the District Court had "raised the master's total 'estimate' of this wholly imaginary reproduction cost from $20,282,143 to $21,392,821," although the actual investment in the property was less than $16,000,000, and included little if any money contributed by the stockholders.

It may be regretted that Justice Black's recommendation was not followed; but it is to be noted that prudent investment was not the direct issue before the Court, and that its action in remanding the case for further evidence does not necessarily settle the matter adversely to the public. That action may be considered as consistent with the reproduction cost doctrine apparently relied upon by the Commission and the lower courts, and serves to emphasize the delays, uncertainties, costs, hazards and injustices which that doctrine entails.

The *Alabama Power Company* case was concerned with the legal right of the Public Works Administration to finance municipal electric systems by Federal loans and grants. The Court did not decide this point, but ruled that the Alabama Power Company was in no position to contest it, as the competition of the municipal systems with the power company was quite legal.

Since no legal right of the Company was abridged by a properly authorized municipal system, the Company had no standing in court to question the source of the municipalities' funds. The Court was careful to point out that the PWA loans and grants were not conditioned upon any regulation of the municipal enterprise by the Federal Government. The hopes of the utility companies that they can prevent Federal assistance to municipal electric systems by court action have thus met with a further serious setback; and as an attack as a taxpayer was also ruled out, the defeat appears to be complete, on the general proposition. It may be expected that the continued possibility or actuality of such assistance toward competition will stimulate further rate reductions and discourage high valuations on the part of privately owned utilities.

Has Your City Overlooked the Wooden-Shingle Roof?

By PERCY BUGBEE
Assistant Managing Director, National Fire Protection Association

MORE than 500 municipalities now prohibit wooden-shingle roofs by ordinance throughout the entire city limits. The cities that have the protection of such ordinances represent 27,000,000 people, or nearly 20 per cent of the national population. The conflagration hazard of the wood shingle is naturally more acute in a large city, and this hazard has been recognized by the fact that 53 of the 93 cities over 100,000 population in the United States either prohibit wooden-shingle roofs entirely or have practically no wooden-shingle roofs left.

Nevertheless, Los Angeles, Miami, St. Paul, Kansas City, Omaha, Buffalo, Toledo, Dallas, Houston, Seattle and Milwaukee are among the cities which still permit wooden-shingle roofs. They occur in great numbers in Alabama, Illinois, Indiana and Iowa. In Alabama a five-year record shows that 46 per cent of all fires in buildings in the state may be assigned to "sparks on wooden-shingle roofs"; in Indiana, 34 per cent; Iowa shows 31 per cent over a ten-year period, and Illinois 21 per cent over a six-year period.

In Flint, Mich., (156,000 population), of 1,234 of the fires in buildings during 1936, 523, or 42 per cent, were due to sparks on shingle roofs. Minneapolis only partially restricts the wooden-shingle roof and attempts to provide an ordinance have been strenuously opposed by lumber dealers. A study of the past ten years discloses that the city has had well over 6,000 such fires, and that an average of 34 per cent of all fires in buildings during the ten-year period were shingle-roof fires.

Detroit is perhaps the most "horrible example" of an important city where wooden-shingle roofs are widely used and where the city building code still permits them. In 1936, there were 3,248 shingle-roof fires in this city; 36 per cent of all fires in buildings occurred from this one cause. Detroit has averaged well over 2,000 wooden-shingle roof fires for the last ten years.

A particularly interesting case is that of Berkeley, Calif., where a conflagration in 1923 destroyed 640 buildings, with a loss of $6,000,000. An ordinance prohibiting wooden-shingle roofs was adopted shortly after the conflagration. Berkeley is near the part of the country where wooden shingles are manufactured, and most strenuous efforts were used by lumbermen to repeal this ordinance; repeal was finally effected. Fire officials, with the conflagration vividly in mind, have been successful in reducing the proportion of combustible roofs in the city, and in the last four years, 1,800 of the 2,171 roofs applied, or 83 per cent, have been fire-retardant. In spite of this and of the fact that losses in the city are very low, owing to a competent fire department, 40 per cent of Berkeley's fires in the last year were due to sparks on wooden shingles.

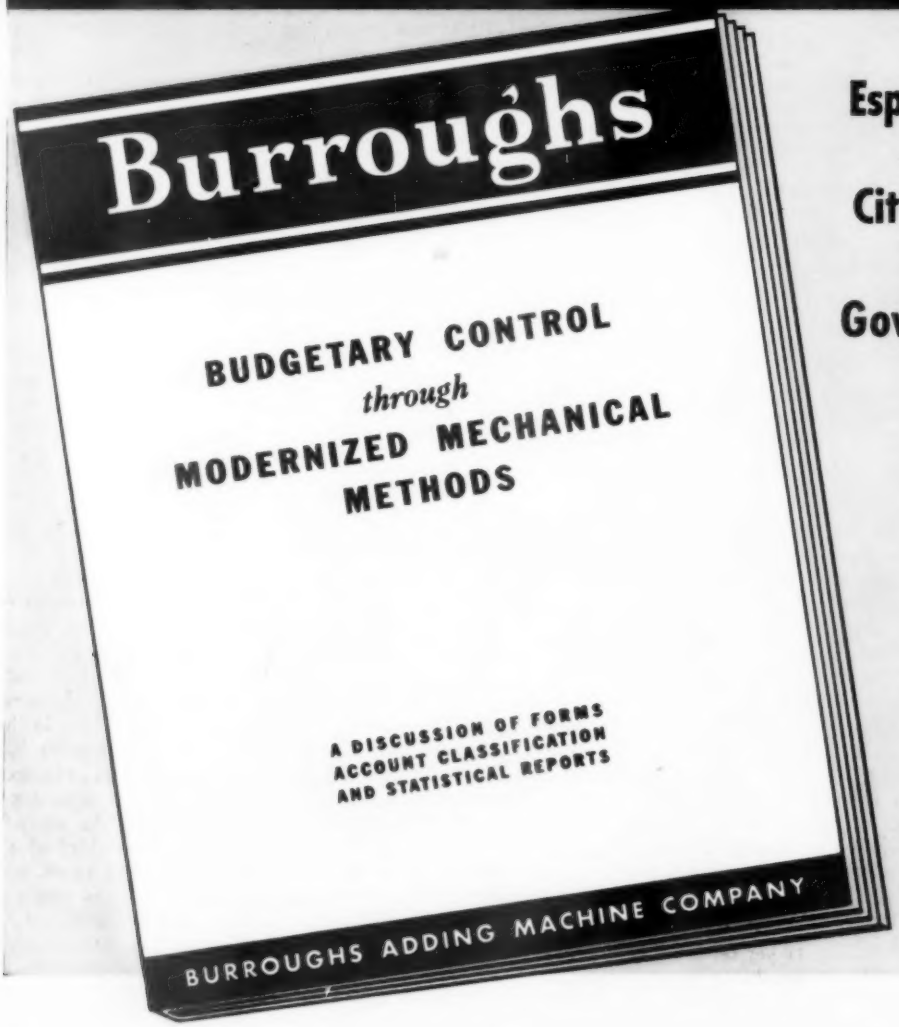
Because of the widespread use of soft coal in Indiana, wooden-shingle fires have been numerous. Many cities in the state have passed prohibitory ordinances. Indianapolis has drastically reduced its number of fires because of an ordinance prohibiting wooden-shingle roofs. In spite of this experience, Fort Wayne has not yet adopted an ordinance. An analysis of the fires of the past four years shows that one-third of all fires in Fort Wayne buildings are due to this one cause.

The National Fire Protection Association believes that the time has come when all thinking city officials should act to eliminate the totally unnecessary fire hazard of the wooden-shingle roof. There are on the market today so many varieties of fire-retardant roof covering which is no more expensive to the property owner than the wood shingle that there no longer appears any reason for permitting this particular fire hazard to continue. There are plenty of legitimate uses of lumber in building construction, and no city is imposing upon an industry or upon its local people by legislating against wooden shingles for roof covering. At any time, for the asking, the National Fire Protection Association will be glad to furnish any city official with copies of its suggested ordinance prohibiting wooden-shingle roofs, and factual data to back up the statements made in this article.

A NEW UNIFORM BUILDING CODE

Berkeley, Calif., has accepted a new building code patterned on the 1937 edition of the uniform code adopted by the Pacific Coast Building Officials' Conference. One of the important changes embodied in the new code is the more economical construction allowed in new buildings. After many thorough tests made by the Pacific Coast Building Officials' Conference, higher stresses in building materials are permitted, thus allowing for less expensive construction. Almost every city in the San Francisco Bay region has adopted this uniform building code.

A PRACTICAL GUIDE TO BUDGETARY CONTROL



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Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Indoor Recreation Centers

ELIZABETH, N. J.—This city is demonstrating that the public will support and patronize public recreation programs during the months of the year when indoor activities are necessary. The Elizabeth Recreation Commission sponsors activities in fourteen different indoor centers.

Three centers are located on playfields in attractive club-houses, ideally suited for neighborhood groups. They have become the wholesome meeting centers of the youth and adults and help to minimize the street corner gang and pool-hall hangout. Two Community Centers, located in areas of congested population, were formerly used for fraternal meeting places, dance halls and saloons. With little renovation, they are now used to capacity as combination boys' clubs and neighborhood centers. Children, youth and adults are enrolled as members.

Certain facilities in eight public school buildings are used a number of evenings each week. Gymnasiums and auditoriums meet the needs of athletic, music and dramatic groups. The State Armory facilities are made available, under direct supervision, for certain activities such as indoor track and tennis.

The aim and policy of the Commission has been to make available to all people at all times as many indoor recreation facilities as can be secured and properly supervised. By cooperative effort, public and private facilities in Elizabeth which were not used nearly to capacity can be constructively utilized.

The program of activities to be found in these centers covers the entire range of recreational interests. A typical day:

MONDAY, JANUARY 3RD

Bowling—Class AA, Eagles, Liberty Hall, Polish Nat'l Home

Bowling—Class A, Jr. Order, Stars, Liberty Edison, H. Memorial

Basketball—City League, Class A, Group 2, Hamilton

Tap Dancing—Brophy, 3:30-5:30; Battin H. S., 7:30-8:30 P. M.

Elite Social Dance Club—Hamilton Jr. H. S., 7:30-11 P. M.

Women's Gym Class—Battin High School, 8:30-9:30 P.M.

Art Class—Battin High School, 7:30-9:30 P.M., Room 245

Elizabeth Civic Orchestra—Battin High School, 7:30 P.M.

Sr. Dramatics—Downtown Community Center

Boxing—Midtown and Downtown Community Centers, 7-10 P.M.

Italian American Civic League—Midtown Community Center, 9-11 P.M.

Social Activities—Men, School No. 15

Baseball—"Hot Stove" Club, Downtown Community Center

Badminton—Elizabeth vs. Short Hills, State League match, Jefferson

Elizabeth Civic Theatre—Midtown Community Center

Similar activities are conducted on the other days of the week, including an abbreviated program on Saturdays and Sundays.

Elizabeth feels that it is securing satisfactory returns from its investment and that it has worked out a practical solution to the need for providing facilities for indoor recreation activities.

ARTHUR T. NOREN,
Superintendent of Recreation, Elizabeth, N. J.

Financial Credit Union for City Employees

MEMPHIS, TENN.—Encouraging thrift and foiling the loan shark, the Municipal Employees' Federal Credit Union established in Memphis five months ago now has 418 members. The movement towards its formation was started last summer by the Personnel Director and received a hearty response from city employees, many of whom had suffered from exorbitant interest rates charged them by professional lenders in time of emergency. The Union was organized August 1, 1937, and is chartered under the Federal Credit Union Section of the Farm Credit Administration. Members have deposited $6.733.45, and loans totaling $7.286 have been made. Short-term notes give a quick turnover to most loans.

Every city employee may participate in the Credit Union's services. Firemen, however, already have a state-chartered credit union which has been in existence for some years. Instead of paying the loan shark's rates, running as high as 45 per cent interest, Memphis city workers can now obtain a loan at 1 per cent interest on the unpaid balance, repaying 10 per cent of the principal each month, or more if desired. Borrowers are encouraged to make a savings deposit each time a payment is made on the loan.

The board of directors of the Credit Union is elected by the membership, which also votes for the supervisory and credit committees. The directors elect officers from among themselves, the treasurer being the only official who is bonded. Through the cooperation of Mayor Overton, with whose endorsement the Credit Union was formed, one of the city accountants is enabled to give part-time service free to the Union as treasurer.

Quick credit granted by their fellow employees has aided city workers to meet such varying needs as bills for the stork's visit and payments on a home, tax obligations, doctor's and hospital debts, and often to escape from commercial lenders' clutches by paying off small accounts with one loan from their Credit Union. The Union is eliminating the problem of garnishments of employees' salaries. We believe that it is a valuable and much-needed feature of any city government's personnel program—and we know that ours is here to stay!

ANDREW J. MILLER,
Personnel Director.

A Snap of the Switch and You're in Conference

ROCHESTER, N. Y.—I have some positive and emphatic conclusions on the value of inter-office communicating systems. A few years ago we installed a device known as the Dictograph intercommunicating office telephone. This system has many advantages not present in the ordinary telephone system. Calls

ROCHESTER'S BUILDING SUPERINTENDENT MAKES CONTINUAL USE OF HIS DICTOGRAPH

are made by pulling a series of small levers on the face of the master station. It is possible to talk with any individuals in various offices at the same time, and their voices return to me through an amplifier, so that I, or persons sitting with me in my office, can hear the conversation. It is further possible to ring in any one or all of the other stations spotted through the various offices. When this is done, all persons in my office and all those who have been cut in on other instruments can hear whatever conversation takes place between any or all of this group.

This makes it possible to discuss matters with several executives without their having to visit my office personally.

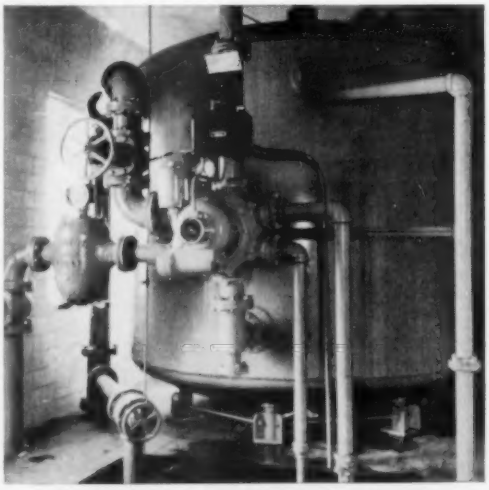
The City Hall switchboard is rated the busiest in the city of Rochester. Before we had this inter-communicating system, we were forced to use the main switchboard for any inter-office calls. This of course threw a great burden on the switchboard operators. In many cases,

THE city administration was up for reelection. Heavy opposition was expected. A live campaign issue was needed. An issue touching the homes, the comfort and the pocketbooks of every citizen. An issue that would swing the votes.

The Superintendent of Water Works suggested it first. He sensed strongly that the citizens were fed up with the hard water. They had suffered too long the discomfort and expense of scale-choked plumbing, of latherless shaving. Wives were complaining. Hard water was ruining their homes.

He knew too that they were becoming water-wise. They would no longer accept hard water as Nature's mistake, when they knew that it could be softened, simply and completely.

He suggested that a proposal to install a Permutit Water Softener in the local water supply system would be an issue certain to command popular support. And his idea swung the election!



Typical installation of Permutit equipment to soften small municipal supply

In hundreds of communities softened water should be an enormously popular public improvement. How about talking up a Permutit Water Softener for your town? Write for information—references—analysis—recommendations. Address The Permutit Company, Dept. G3, 330 West 42nd Street, New York, N. Y.

Permutit *Water Conditioning*

rather than use the overloaded switchboard facilities, we would make personal trips from one office to another.

All of that was horse-and-buggy, and it is now possible by the snap of a switch to talk directly with any of our various offices and not receive a busy signal or wait several minutes for a connection. Indeed, this system which we have is the outstanding time-saver of this bureau.

WALKER S. LEE,
Superintendent of Buildings.

A Building Survey to Aid Local Assessors

PROVIDENCE, R. I.—A survey of all buildings in Providence has been started in February as a WPA project. The purpose is to provide the Providence Board of Assessors with a real picture of the physical city. Type of construction, materials and equipment will be noted, and these facts will be set against standard tables of depreciation and replacement to form a basis for reassessment by the assessors.

More than 54,000 properties are to be cataloged by 125 to 135 white-collar workers selected by the WPA. The city will furnish supervision and materials. The cost of the survey, which will be made under the direction of Byron Hopkins, State WPA Coordinator, is estimated at $100,000 and will take a year.

Those who will take part in the survey will attend a training school. The results, Mr. Hopkins says, will permit reassessment of Providence properties on an equitable and scientific basis. A special appeal to home owners and other property holders to cooperate in the survey is planned by Mr. Hopkins.

E. B. NORTON.

An American Art Center

SYRACUSE, N. Y.—Here is an art museum that has grown so much in the past few years that an adequate building of its own became absolutely imperative to take the place of cramped quarters on the third floor of the public library. Consequently, a community-wide campaign was started in June, 1937, to raise $75,000 required for the acquisition and repair of an old mansion located in the center of the city and possessing many desirable features. The brownstone building at James and North State Streets was built originally as a family home by a prominent Syracuse citizen. Later it was purchased by the Knights of Columbus, who added a fireproof wing and an auditorium seating 800. So effectively was this remodeling done that no structural changes were necessary in the building to provide suitable galleries for the museum's permanent collections and for other exhibitions and a center for community art and related activities.

On October 28, 1937, two floors of the new building were formally opened, although $14,000 of the $75,000 was lacking. Subscriptions were still coming in, which persuaded the trustees that they need wait no longer for the needed space. Eventually there will be three floors in use—first, second and a basement. The first floor provides a total gallery floor space of 2,250 square feet, divided into one large and several smaller rooms, and also contains the auditorium, an attractive dining room, a library and offices. On the second floor is 3,560 square feet of floor space with one large room and several small rooms. The library is used as a "listening room" for a music appreciation set allocated to the museum by the Carnegie Corporation. The basement, which will not be opened until sufficient funds have been received, will furnish a large room for a children's art center, rooms for the museum pottery classes, pottery kiln, and etching press, darkroom, etc., as well as the superintendent's office, receiving room and workshops, lavatories and storage space.

By Dwight James Baum, Architect
ARCHITECT'S DRAWING OF SYRACUSE MUSEUM OF FINE ARTS

The special features and activities of the Syracuse Museum are particularly interesting. It has been committed to American art almost from its foundation in 1896. It has been gradually accumulating a collection of the works of living American artists considered to have permanent value.

Perhaps the feature of the Syracuse Museum of which it is most proud and for which it is most widely known is the annual National Ceramic Exhibition, founded as the Robineau Memorial Exhibition because of the museum's fine collection of porcelains by Adelaide Alsop Robineau. The 1936-1937 exhibition (the fifth annual) contained entries from 26 states, and selections from it were circuited by the Syracuse Museum to a number of American cities, including Worcester, Cleveland, Pittsburgh, San Diego, Los Angeles, San Francisco and Seattle.

In 1936, the Syracuse Museum was also officially invited to assemble an exhibition of contemporary American ceramics for the Kunstindustri Museum at Copenhagen, Denmark, and afterwards for the museums of Gothenburg and Stockholm, Sweden, and Helsingfors, Finland, and Stoke-on-Trent, England.

The educational work of the Museum has been outstanding during the depression, free classes being initiated in 1932, and continued with the help of Federal funds. Emergency classes were held daily for three years for children from overcrowded schools. The Museum has also an extension program of cooperation with musical organizations, and offers its facilities to the School Art League and to various civic groups.

The auditorium, equipped with a modern ventilating system, is available at a moderate rental fee. A stage will later be built of sufficient size to accommodate an orchestra of 30 or 40 pieces. The acoustics are excellent. In this hall will be held the Museum's annual series of free concerts, lectures, moving pictures, marionette shows and many other programs put on by affiliated or outside groups.

ANNA WETHERILL OLMSTED,
Director, Syracuse Museum of Fine Arts.

1,000 *Localities Have "Community Forests"*

NATURE-seekers of more than 1,000 American cities and counties in 27 states can hike or picnic without running into "no trespassing" warnings. That many localities now have community forests that total nearly 3,000,000 acres, reports the International City Managers' Association. Their purpose is to produce fuel and timber, protect watersheds, and provide recreation and wild life refuges.

Among the states that have enacted legislation authorizing acquisition of town or county forests are New York, New Jersey, New Hampshire, Vermont, Massachusetts, Pennsylvania, Indiana, Ohio, Minnesota and Wisconsin. Massachusetts and Wisconsin laws empower state forestry departments to take over general supervision of the forests in their towns and counties. The state forestry department in Massachusetts will map and make five-year plans for any town forest upon request from the town authorities.

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FOR YEARS, American cities have reported thousands of water-main breaks annually due to sudden fractures of friable pipe . . . with repair costs and damages amounting to many thousands of dollars. And here's what leading city engineers are doing about it—they're swinging over to steel pipe.

These men have found by long experience that the high tensile strength and flexibility of steel are valuable assets. They have seen NATIONAL Steel Pipe stand the test of years under the constant vibration of heavy street traffic . . . under the stresses of trench pressures, cave-ins, settlements, and washouts. They know that it has the necessary reserve stamina to resist unpredictable forces that frequently cause damage to pipe of less reliable material.

For trustworthy water mains, specify NATIONAL Steel Pipe. Immediate savings in installation costs, and long-term savings in maintenance expense will credit your judgment. And your city will receive the benefit of water service that is thoroughly dependable.

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The Growing Attack on Urban Blight

Erase Blight and Restore Values

KENOSHA, WIS.—The recent elimination of a blighted area from the central district of this city has paid for itself in increased property values and has proved a boon in terms of added convenience and safety. The history of this project in brief is as follows: In the early years of the development of Kenosha, a factory manufacturing farm wagons was established which occupied almost an entire block in the heart of the downtown district, immediately adjacent to the largest bank in the city. With the development of the automobile, the wagon company gradually discontinued operation and eventually closed down entirely, leaving a large number of obsolete brick and wooden buildings and a switch track leading directly into the factory over what had become one of the main streets.

The City Plan as adopted in 1924 included provisions for the elimination of this blighted district. To accomplish this meant the demolition of the buildings, the opening of new streets, and the elimination of a crooked alley that was zigzagging through the property, as well as the removal of the switch track from the major street to land adjacent to and skirting the extension of Kenosha's harbor.

The land upon which the old factory building stood was owned by an industrial corporation; the land needed for the replacement of the track along the harbor was owned by the Chicago and North Western Railroad Co., the Wisconsin Gas & Electric Co., and the Union Tanning Co. The land needed for the opening of a new street was at one time a dedicated thoroughfare but had been vacated and had reverted to the adjoining property, which in this case was that of the Bain Wagon Co. This particular piece of property had been sold by the Bain Wagon Co. to an individual; therefore it was necessary to condemn the land to provide for the extension of 7th Avenue, one of the main business streets of the city. Because of the complicated set-up involved, the utilities and the railroad company having ownership of property needed, and the difficulty of proceeding by eminent domain, the city officials called in the chief executives of the corporations affected. A series of conferences was held, and by an exchange of properties between the city of Kenosha and the four corporations owning the property needed for the rehabilitation of the blighted district it was possible to relocate the switch track and secure the necessary dedications from the wagon company for the opening of two main thoroughfares and the elimination of the crooked alley. In exchange for the dedication of the properties required for the streets and for the relocation of the switch track, the city agreed to put in sewers, water mains and sidewalks and to pave the streets, and also to condemn by court procedure the one piece of property needed for the opening of the street.

The items of cost to the city were: condemnation of the one lot needed for the extension of 7th Avenue; installation of sewers, water mains, sidewalks; paving of 55th Street and 7th Avenue; and $8,200 for the purchase of right-of-way for the relocation of the switch track. But the rehabilitation of the district and the development of its property has increased values to more than repay the city for its expenditures in the few years since its completion. Also, the elimination of four grade crossings on four of the principal streets of the city, through the relocation of the switch track, has been a great improvement.

H. C. LAUGHLIN,
City Manager.

Chamber of Commerce Housing Committee

BUFFALO, N. Y.—The new housing program announced by the Committee on Housing of the Buffalo Chamber of Commerce deals less with the actual construction of new homes than with problems related to or affecting such construction. Revision of municipal building codes and zoning laws, reduction of real estate taxes, a study of mortgage financing charges, and a survey of housing conditions in the city, constitute a major part of the program. At the same time it is proposed that a thorough study be made of the design, methods of construction and costs of both individual small homes and large-scale projects with a view to accomplishing a reduction in the total cost of such construction. A study is also to be made of slum areas and the probable effects of any slum clearance project which may be undertaken locally.

By augmenting considerably the personnel of the Committee, seven sub-committees have been organized to carry out each important phase of the program. These seven sub-committees and the chairmen who have been selected to head them are: Building Codes and Zoning, Leo N. Hopkins; Housing Survey, J. Bennett Wood; Taxation, Dexter P. Rumsey; Finance, Carlton P. Cooke; Small Homes, Edward F. Entwisle; Slum Clearance, Paul E. Fitzpatrick; Public Relations, Melvin H. Baker.

Of primary concern is the current recession in general business, and the present financial condition of the city government in relation to its ability to engage in housing developments in Buffalo by financing slum clearance projects.

Of no less importance is the problem of devising ways and means of disposing economically of unsafe and unsanitary houses which exist in certain sections of the city and the obsolete but structurally sound houses which are not readily marketable.

MAURICE W. HOWE,
Chairman, Committee on Housing.

Blighted Areas and Re-Zoning

CHICAGO, ILL.—As in previous years, the Chicago Plan Commission during 1937 gave considerable thought and attention to the matter of rehabilitating Chicago's blighted areas. The seriousness of this problem of blight is shown by the fact that nearly one-fourth of Chicago is affected. There are approximately 200 square miles of area within the Chicago city limits. Of this amount nearly 50 square miles, or 25 per cent of the total city area, are blighted. Within blighted districts the Federal Housing Administration will not insure mortgages; and, in fact, no bank or mortgage institution will lend money on property.

Of Chicago's 200-square-mile area, 40 square miles are devoted to manufacturing and commerce, whereas 77 square miles (or nearly double the area now actually in use) are zoned for these purposes. Sixty square miles are being used for residential purposes, and 70 square miles are set aside for that purpose in the zoning ordinance. The total area designated for residential uses may not be excessive, but the subdivision of this area between single- and multiple-family dwellings is badly out of proportion. Sixty-seven square miles of territory are actually being used for parks, streets and alleys, water areas and special purposes, while only 53 square miles are so zoned. Thirty-three square miles of city area are vacant.

Conditions like these point to the need for re-zoning Chicago. This subject, therefore, should be an important part of the work of the Chicago Plan Commission during 1938, together with the continuation of the recreation study now going on in cooperation with the Chicago Recreation Commission; and a housing study to aid in the selection by the Chicago Housing Authority of low-cost housing sites that will fit in with and become part of the Plan of Chicago.

ALBERT A. SPRAGUE,
Chairman, Chicago Plan Commission.

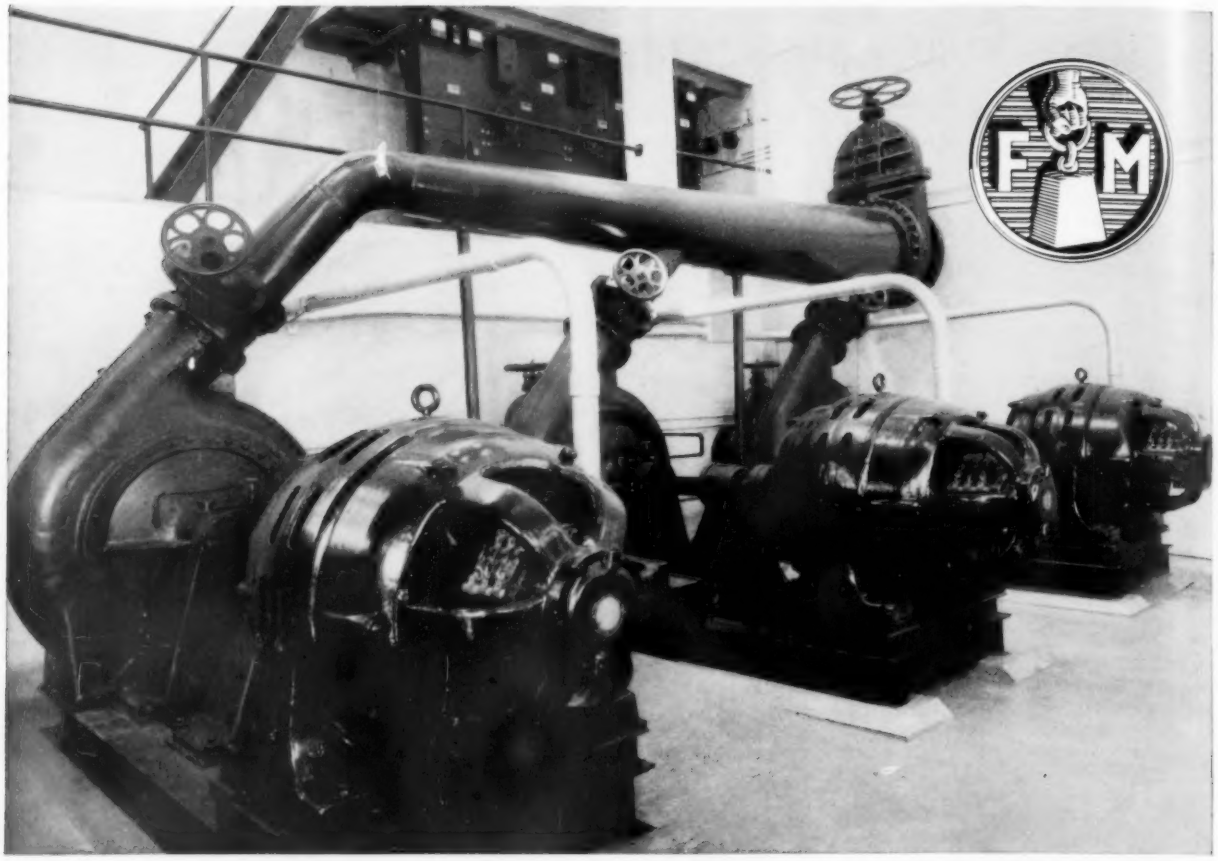
City Council Establishes New Committee

CLEVELAND, OHIO.—In adopting new rules for its 1938 activities, the Cleveland City Council has merged several previous committees into a new one known as Committee on Public Development, Planning and Housing. Its jurisdiction is as follows:

"Committee on Public Development, Planning and Housing, to which shall be referred all ordinances and resolutions and other matters relating to the use of city property and land for public purposes, city planning, zoning, vacation of streets, slum elimination and housing, bridges and harbor, river straightening and lake-front development, and all matters relating to the Building Code."

The undersigned is Chairman of the Committee.

ERNEST J. BOHN.



River Meets Its Match at Little Rock

THE Arkansas River used to put Little Rock "on the spot" every time it went on a rampage. At flood stage, gravity flow outlets of Little Rock's sewage system were unable to discharge.

All of that is changed now. A sewage relift pumping station equipped with three Fairbanks-Morse horizontal sewage pumps, driven by F-M HV 60-hp. slip-ring motors, has been completed. When the river reaches a 16-foot stage, gravity flow lines are closed and the pumping plant goes to work. Each pump has a capacity of 6000 gallons per minute against a maximum pumping head of 27 feet. Since the average head is considerably less than 27 feet, the slip-ring motors have variable speed controls. Speed can be varied between maximum and 50% of maximum to meet actual requirements.

No matter what you want to pump, where you want to pump it, when or how, Fairbanks-Morse makes the pump for the job. For specific information regarding the answer to your pumping problem, write to Department 5410-1, Fairbanks, Morse & Co., 600 S. Mich. Ave., Chicago, Ill. 34 branches at your service throughout the United States.

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York

Paul L. Green, Chairman; George W. Barton, Kenneth W. Mackall, Miller McClintock, Robert A. Mitchell, William R. McConochie, Arnold H. Vey, Joseph L. Wehmeyer, William A. Van Duzer, Thomas J. Seburn, Roger L. Morrison, Otto K. Jelinek, William C. Brandes

Is There to Be a City Traffic Revolution?

Various Shades of Opinion on the Ross Schram Platform as Given in the January Issue

Here Is the Platform: The elimination of parking on all public-carrier streets during the 2- to 2½-hour morning and evening rush periods, and the assignment of the in-bound or out-bound lane adjacent to the curb solely to public-carrier vehicles. With the above segregation, compulsory far-side stops for public-carrier vehicles.

Adopt It!

IN regard to Ross Schram's article, I do not see how you can reasonably expect any one to provide opposing arguments or viewpoints. The average car owner wants a safe travel lane that will permit speed, and then he wants 100 or more square feet of street space, the most expensive space in the city not covered with a building, all day long for his car.

The streets of Boston are more occupied by standing cars than by moving cars. Many of our narrow streets have two continuous lanes of parked cars, with one narrow lane for moving cars. Even on some of our wider streets there are two moving-car lanes and frequently there is double parking, and sometimes triple parking for short periods.

In the meantime we continue to erect higher and higher buildings—the limit in the business district here being 155 feet in height with a 100 per cent coverage. Boston has long passed the saturation point for her streets, and yet her average height in the business area is not over 70 feet. This may be said of the so-called down-town district. If we add to it all the outlying areas zoned for business, the actual height for all the business areas would probably not run over 50 feet.

Our newspapers are yowling their heads off over the fact that traffic jams imperil trade. On the same page one editorial will bemoan this fact, while another editorial will highly praise the erection of new buildings 155 feet high with a 100 per cent coverage.

I would very much like to see Mr. Schram's suggestion carried out. George Hooker, of Chicago, said years ago that a solution of the city's traffic problems would have to depend primarily upon mass transportation. Assume a bus which can carry comfortably forty people. It needs a lane of travel and stopping points. It needs no parking space because it does not park. Contrast its effect upon the city streets with the effect of, say, thirty private automobiles, each bringing in one or two people and then occupying the streets all day long.

I am not opposed in argument or viewpoint to Mr. Schram's suggestion.

E. T. HARTMAN,
State Consultant on Planning, Boston, Mass.
December 17, 1937.

Arnold Vey for Free Movement

I READ, with considerable interest, the article in your December issue entitled "Mr. Coach Rider Finds a Champion," particularly the so-called platform Mr. Ross Schram offers. I am in accord with his sympathy for the rider of mass-transportation vehicles, especially when it is considered that such vehicles (trolleys and buses) occupy only one-tenth to one-seventh of the number of square feet street space per passenger of that occupied by the private car.

However, the private car is here to stay, at least for some time to come, and as the privilege of stopping and parking the private car is an integral part of transportation by such a vehicle, I do not believe it proper, on a wholesale basis, to prohibit the stopping and parking of the private car. On the other hand, I do believe it important on congested roadways, especially during rush-hour periods, to either prohibit or regulate parking to such an extent that riders in mass-transportation vehicles, as well as in private cars, can travel such roadways with ease.

I am consequently in agreement with Mr. Schram's platform to eliminate parking on public-carrier streets, but limited to the downtown and suburban areas. I do not believe it reasonable or proper to arbitrarily prohibit parking on all public-carrier streets without regard to the need for such a regulation.

Neither does it seem reasonable to me to assign the inbound or outbound lane adjacent to the curb solely to public-carrier vehicles. For example, such a requirement would prohibit a private car driver from pulling to the curb to discharge or pick up a passenger. The streets belong to the public, of course, and in my opinion the driver of the private car has just as much right to use the curb, within reason, as the riders of public-carrier vehicles.

I feel that we can strike a happy medium between the two. As a matter of fact, because the rider of mass-transportation vehicles occupies considerably less street space per passenger than those of private cars, we could lean to some extent in favor of the rider of public-carrier vehicles. In general, I am in favor of far-side stops.

ARNOLD H. VEY,
Traffic Engineer for State Commissioner of Motor Vehicles, Division of Traffic Control and Regulation, Trenton, N. J.
January 4, 1938.

A Simpler Plan Proposed

I HAVE read with interest the proposal of Mr. Schram that curb lanes be cleared of parking during the rush hours and then definitely restricted to the use of the public-carrier vehicles. There is no doubt that such a regulation would materially benefit the utility operations.

However, I wonder if he has considered how such a regulation might be enforced. While time parking can be regulated, I know of no law that would prevent anyone from making a momentary stop at the curb for legitimate purposes. Is it not better to recognize this and stress the enforcement on the clearances necessary at intersections, rather than to attempt to maintain an open lane throughout the length of the thoroughfare?

A great deal of the trouble that the utilities are experiencing can be laid right back in their own laps. In most communities the deplorable service that they offer leads their potential patrons to prefer to drive their own cars. A reasonable service schedule, with sufficient equipment to seat their passengers, would materially reduce the number of private cars driven into the congested areas. Consideration by the utilities for their own effect upon traffic conditions in the selection of their routes would also greatly reduce their operating difficulties. A revision of their schedules to avoid a concentration of operations at any point at the same time would also relieve congestion. An acceptance of the "far-side" location for the bus stops, and insistence that the bus

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operators pull into and parallel with the curb, would avoid the long lines of vehicles being trapped behind the buses, as they could clear while the bus is at the curb.

If the utilities will start with those things under their own control, then a regulation penalizing the motoring public might be better accepted.

I also question the ratio of car ownership in cities of 100,000 or more. Locally we have a population of 295,000 with a passenger-car registration of approximately 73,000 or a ratio of one to four. This is very nearly one car per family in this community.

PAUL S. ROBINETTE,
Traffic Engineer, City of Toledo.

January 10, 1938.

Overlooks Street Cars

MR. SCHRAM has not brought out that most American streets are 40 feet wide and that if a double line of street cars were in the middle of the street and a line reserved for buses near the curb, the street would be totally blocked by public carrier vehicles and no flexible progressive movement of traffic would be possible, because these public-carrier vehicles would stop every block for the loading and unloading of passengers.

K. W. MACKALL,
Engineering Department, Crouse-Hinds Co., Syracuse, N. Y.

January 4, 1938.

The New Trolley Is Part of the Solution

REGARDING "Mr. Coach Rider Finds a Champion," subtitled "A Platform for the Coming City Traffic Revolution," in your December, 1937, issue, I heartily agree that streets in large cities have reached the saturation point with automobile congestion, and that something must be done to relieve this menace.

I must take issue, however, with several statements by the author of this article, and his apparent belief that motor-bus transportation is the solution. While modern (?) buses under Mr. Schram's consideration have attained the startling acceleration of three to four miles per hour per second, the new P.C.C. Street-Car surpasses this with a record of five to six miles per hour per second.

Again, I must disagree with the remark that "traffic *knows* where the bus will be." This statement is quite improbable in view of the fact that six-lane highways being built give more than three possible portions of the road in each direction for buses to travel on. I ask you, under conditions such as these, how can traffic know where a bus will be?

Pertinent to the figures obtained from Detroit traffic checks, if all the passengers crossing this intersection were to be placed in 35-passenger buses, it would require 829 buses, *or* 290 street cars!

Figures from your June issue show that no city with over 500,000 population is yet dependent only on bus transportation; less than one-fourth of the cities between 100,000 and 500,000 are dependent solely upon bus transportation; and less than one-half of the cities between 25,000 and 100,000 are dependent alone on bus transportation.

Only the modern street car can transport such large numbers of passengers from one place to another with such safety, speed and minimum street congestion.

IVAN R. BAKER,
Representative, Electric Railroaders' Association, Los Angeles, Calif.

January 5, 1938.

Make City Blocks Hollow Squares and Park in Them

THE enclosed MS on the Batavia Parking Plan carries the method of accomplishing the point put forth by Mr. Ross Schram in his speech at Kansas City before the National Safety Council which you recently printed.

L. H. SCHULTZ,
Blue Bus Lines, Batavia, N. Y.

BATAVIA PARKING PLAN

EVERY car owner and every American city is suffering from the parking problem which, in turn, has prevented any effective solution of the traffic problem. Commercial parking stations have not solved the problem in larger cities, and fee parking is not profitable in the majority of cities under 40,000 population.

If a modern city were built today, there would be no parking problem—the solution being the design of business blocks in quadrangles with one side open, thus providing free parking for everyone in the interior of the quadrangle and none on the streets.

To solve these problems, a re-designing of present city blocks to the modern plan is proposed by the following procedure:

1. Raze selected buildings, many of them fire traps, in the interior of quadrangles, in the rear of business blocks, or on least valuable sites of solid business blocks.

2. Consolidate all such cleared lots with present vacant lots and numerous alleys into large free parking areas. In larger cities build second decks for all-day parkers employed in section.

3. Grade, drain, and surface the ground areas, and adequately light all of them.

4. Merchants adjoining parking areas would open rear public entrances with adequate lighting and signs for use of car drivers, while pedestrians would use present front entrances.

5. Eliminate all car parking and standing on streets.

Providing parking areas off the streets is essentially as proper a function of government as the construction of streets and highways now used for parking. It is proposed that state legislatures pass enabling acts providing for the creation of Municipal Parking Authorities or Commissions with the following powers:

1. To condemn property
2. To create and regulate free parking areas
3. To issue bonds
4. To levy taxes in payment for same

Assuming that a downtown business block comprises 40 different buildings occupied by merchants, the Parking Authority would condemn two of the less valuable and oldest buildings, raze them and erect a second-story parking deck if necessary.

Assume that the remaining 38 buildings are of equal value and assessed at $100,000 each on the basis of 50 per cent of their real value. Assume that the lots used for the parking area were the least valuable and purchased at twice their assessed value of $50,000 each or $200,000. By increasing the assessment of each piece of remaining property 17 per cent, this cost can be retired with interest at 4 per cent within twenty years. With a tax rate of $30 per $1,000, a merchant occupying an entire building assessed at $100,000 would be paying $500 per year for parking facilities for his customers, a sum far less than his advertising budget which endeavors to bring customers to his store without providing facilities for them, and far less than aggressive merchants are now paying in parking charges at fee lots. In practice, values of property will vary, and increases would be proportionate.

In many cities property values in the central business district are now depreciating because the saturation point of parking facilities has been reached. This plan, while it means another tax, will reverse this trend.

December 8, 1937.

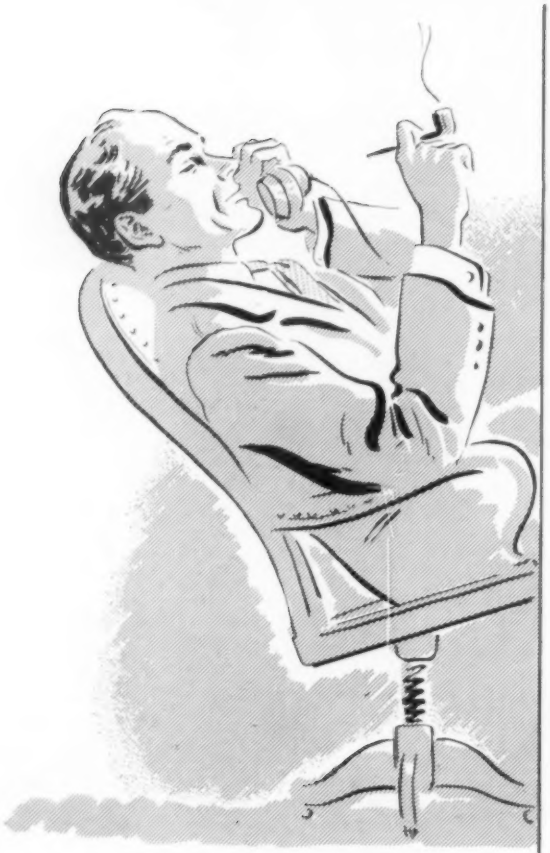
More Space for Bus Stops, Suggests *The New York Times*

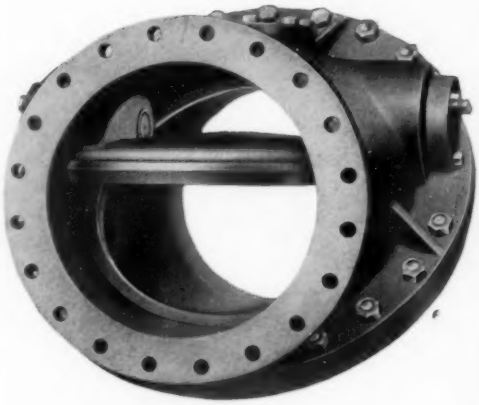
NO city which was laid out more than twenty-five years ago is ideally adapted to modern traffic. In all our cities traffic control is an infant science, with whose experiments and mistakes it behooves us to be patient. The big readjustments we will have to make will be costly and will take time. The small ones are worth trying. Perhaps it will help us to see the situation in perspective if we think of traffic not as the moving of vehicles but as the moving of people. A survey in Detroit (reported, it must be said in all fairness, by the vice-president of a motor coach company) showed "21,115 people riding in 360 public vehicles, against 7,900 people riding in 3,950 automobiles" during a rush hour at a busy intersection. Comparable results could be obtained in New York City, and they would probably emphasize the need for giving preference on our streets to vehicles which carry many passengers, as against those which carry few—to buses and such street cars as we still have, as against taxicabs and private automobiles.

Mr. Ross Schram, who cites the Detroit

(*Concluded on page 95*)

It takes things Easy





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Matter of fact, there's never a sound to tell when Chapman's Non-Slam opens or closes. For there's only one moving part . . . a balanced, hinge-pinned disc that rides steadily in the flow when the valve is open . . . that can't slam when the valve closes because the short flap goes against the stream. *And where there's no sound, there's no wear.* No vibration or water hammer to open the flanges, cause surging or strain the line. No wear within the valve.

That's why so few maintenance men ever see a Chapman Non-Slam Check Valve. For this easy-going valve lives years longer, and keeps in perfect condition all the time. It will save *you* inspection, maintenance and replacements on any water, gas, oil or air service. Write for full details and prices.

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study mentioned above, suggests in his article in the December issue of THE AMERICAN CITY that parking be eliminated during rush hours on all "public-carrier streets" and that the lanes adjacent to the curbs be assigned to public-carrier vehicles. He thinks that traffic would thereby move more rapidly and that accidents caused by buses approaching and leaving the curb would be eliminated. We may not be ready in New York for so drastic a step. Perhaps we are ready to keep clear a longer strip of curb at all bus stops, so that the bus can edge in and out more gradually and with less disturbance of the traffic stream.

The experts in traffic control can always tell us things we don't know. Yet all of us, on foot or in a vehicle, can see that something is wrong and to a degree why it is wrong. We ought to cooperate whole-heartedly in the present attempt to ease the traffic pinch, even though we give up an individual privilege for the sake of the general good.

—*N. Y. Times*, December 15, 1937.

Both Departments Efficient

To the Editor of THE AMERICAN CITY:

In your January issue you refer to Deputy Chief James Thompson, Jr., as of the East Orange Fire Department.

I feel honored in being associated with such a fine department, but in fairness to East Orange, Chief Engineer C. McGinley and the Fire Department in East Orange I beg to inform you that I am a Deputy Chief in the Irvington Fire Department.

JAMES THOMPSON, JR.

Improving Municipal Administration

Current Items from the Public Administration Clearing House

City Manager Government Reaches Its 30th Birthday

CITY manager government celebrated its thirtieth birthday last month. The movement which began when Staunton, Va., passed an ordinance in January, 1908, to hire a "general manager," has grown to include, in January, 1938, a total of 465 cities and 7 counties, the International City Managers' Association has announced. Eleven cities in 1937 joined the list of council-manager cities.

The first large city to attempt the new governmental experiment was Dayton, Ohio, following the devastating flood in the spring of 1913, when the incumbent government failed to function effectively. Dayton and Springfield, Ohio, installed the plan on January 1, 1914. Before the year was over, eight city managers met in Springfield for the first conference of the City Managers' Association, later renamed the International City Managers' Association.

Acceptance of the new form of government during the following years was widespread among cities concerned with adopting new charters. In 1911-1920, of all the charters adopted in 11 home-rule states, 35 per cent were of the council-manager type. In the next decade this percentage increased to 71.

Council-manager municipalities in the United States range in size from Polk City, Fla., with a population of 222, to Cincinnati, Ohio, population 451,160. In addition to the cities and counties under an "approved" form of the manager plan, there are 155 other cities and 36 counties that have some modification of it. San Francisco is the largest city that might be considered as having a modified form of the manager plan. An "approved" council-manager municipality, according to the I.C.M.A., must appoint the manager by an elected council; must make him solely responsible to the council for administrative affairs, and must give him broad appointment and removal powers over administrative officers subject to civil service regulations.

The 472 council-manager governments include 19 cities outside the United States: 14 in Canada, 4 in Ireland and 1 in Porto Rico. Seventeen of the 94 U. S. cities with over 100,000 inhabitants are council-manager cities. In the population group of 50,000-100,00, the ratio is slightly higher than one in four.

Adoptions in 1937 of the council-manager form of government include: Alameda, Calif., which had previously relinquished "approved" standing; Cedartown and Moultrie, Ga.; Jacksonville Beach and Lake Worth, Fla.; Shillington, Pa.; Middlebury and Hardwick, Vt.; Rehoboth, Del.; Greenbelt, Md.; and Orange, Va. Little Rock, Ark., will vote on February 14 in a special election "for home rule or against home rule"; Rochester, Minn., citizens will vote sometime this year on a council-manager charter now being drafted by a special commission. The question is a public issue in Grand Forks, N. Dak.; Des Moines, Indianapolis and Chicago. Verdun, Quebec, a suburb of Montreal, with a population of 62,000, will become a council-manager city as soon as the Provincial Legislature approves the charter amendment already adopted.

Five-Point Program Urged to Fill City Jobs in New Housing Program

A FIVE-POINT program to help cities select personnel to administer their low-cost housing programs under the 1937 United States Housing Act was recommended last month by the Committee on Personnel Standards of the National Association of Housing Officials. At the same time the N. A. H. O. announced that new municipal housing authorities are being established at the rate of one a week.

The Committee report outlines general principles for selecting the new job-holders and suggests the duties and qualifications for the three key positions on housing authority staffs—executive director, technical director, and director of management division or housing manager.

Primary principles are these:

1. Staff positions should not be restricted to local residents; both staff personnel and other employees should be recruited from as wide a field as possible. Later interchange of personnel with other municipal agencies is to be encouraged.

2. Housing positions should be filled only by persons fully qualified under strict standards and methods of examination. Considerations of relief or patronage should have no weight. Civil service protection is desirable.

3. Major positions should be filled whenever possible by those who have been trained in public administration and wish to engage in it as a career. Special training in housing problems is valuable.

4. There should be no differentiation between men and women of equal qualifications.

5. A college degree should not be regarded as an absolute prerequisite for major positions, but the understanding, ability and facility to be expected from a college graduate should be required.

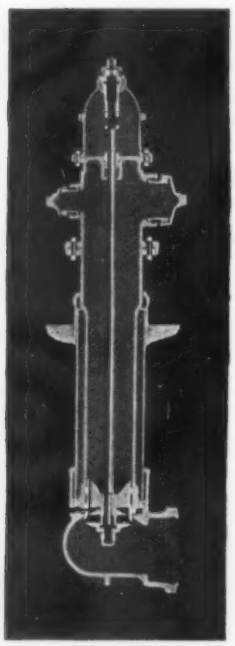
6. The functions of a housing authority should be carefully coordinated with the other functions of the municipality. The housing authority has its own specialized field of operation and should not duplicate other governmental functions: the city planning department should be called upon for selection of sites; the welfare activities and supervision of playgrounds should be taken care of by the appropriate existing agencies.

The report defines training and experience, duties and personnel qualifications of each of the key-men on the housing authority staff; and suggests that local authorities maintain a salary scale equal or above that for corresponding municipal positions.

Many Cities Save by Using Callable Bonds

THE many American cities now planning their annual budgets or drafting long-term financial programs will look with special interest upon the report of the Committee on Municipal Debt Administration of the Municipal Finance Officers' Association, which finds that scores of municipalities and counties during the period 1933-37 made phenomenal

WINTER AND WATER MIX
when fire hydrants are Mathews



• It is no accident that a Mathews Hydrant will deliver water when it freezes as it flies. It is part of the Mathews design that it shall turn on freely, turn off completely, drain immediately, and be ready to go again. It was planned into the Mathews Hydrant that deep clutching frost can't heave it from its main.

This design is fully visible. Notice how the operating threads are sealed from internal water by a stuffing box, and from outside spray by a roof-like and removable operating nut. You can see how the threads stay dry, ready to work.

Notice how the drain valve is part of the main valve. It must close when the hydrant opens. It must open when the hydrant closes.

Notice, lastly, the outer case. It is loose—free to rise with frost-heaved ground. It doesn't strain the water carrying parts. Specify Mathews. Enjoy sure water for fire protection and the ability to repair, inspect, or replace hydrants without digging.

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interest savings by using their callable bond privilege.

The report entitled "The Call Feature in Municipal Bonds" has just been published by the Municipal Finance Officers' Association of the United States and Canada. The committee bringing it is composed of seven city officials, one bond man and one statistician, and the report is an exhaustive study of what use cities may make of callable bonds.

The report observes that time will tell how many other municipalities will take a leaf from the book of big business and install the callable bond in their financial policies. This type of bond is fairly common in private corporate financing. Among cities using the callable bond to a limited extent in one form or another are New York, Chicago, Los Angeles, Cincinnati, Fort Worth, Detroit, Erie (Pa.), Tallahassee and Dearborn. These cities during depression years were able to make savings by callable bond operations, because at early dates they had reserved in their 4, 5 and 6 per cent bonds the right subsequently to call them and pay off bondholders in cash. The cash was secured by selling new refunding bonds; and the great reduction in their interest burdens was because bonds could be sold in a 2 to 3 per cent market.

The report observes that New York City, for example, in 1935 called $50,000,000 of 4¼ per cent obligations due in 1960 but callable since 1930; $16,000,000 were retired and the remainder refunded at a lower rate of interest, with a total net saving to the city of $10,380,685. Among smaller cities, Bellingham, Wash., saved $32,745 by calling and refunding $256,000 of bonds; Haverford Township, Pa., saved more than $350,000 on several calls and refundings totaling $1,088,000.

The report points out that the current municipal bond market is not a good time to issue callables, because interest rates are low. It predicts that when a high level of interest rate again appears—perhaps not until another boom period is well under way—the call feature will probably be more commonly inserted in municipal bonds. Possible savings from use of the optional privilege are now rather vivid in the minds of public officials. A wider usage in the future promises to be one of the more permanent effects of the Great Depression upon municipal finance.

Sound Reserve Plans Urged in Report on City Pension Systems

TWO recommendations are made for those cities tussling with the problem of pension systems, in a report just published by the Municipal Finance Officers' Association:

That all local government retirement systems should be set up under the actuarial reserve plan in order to spread the costs equitably and certainly over the period of years worked by the employee; and that compound interest thus be allowed to carry a substantial portion of the cost. The report also recommended that retirement systems, under most conditions, should be jointly contributory.

Hundreds of city officials are vitally concerned with the pension problem because public employees do not come under provisions of the Social Security Act.

Under the actuarial reserve plan of pension systems (which the law requires insurance companies to follow) an actuary estimates the future costs of benefits on the basis of mortality and experience tables, and is able to adjust yearly payroll sums plus interest which must be accumulated for the municipality to meet its benefit obligations during any year. The reserve thus includes compound interest earnings, which bear a large share of pension costs and reduce the amount of contributions necessary from both employees and municipalities. Compound interest earnings on one dollar saved annually during a period of forty years amount to $44.55.

Costs of a retirement system depend upon: age distribution and life expectancy of employees; rate of resignation, dismissal and disability, and the classes of benefits chosen plus factors that vary from city to city, the report says. In 1933 city employees participating in the New York State Employees' Retirement System contributed 4.94 per cent; municipalities, 3.09 per cent of payroll, thus effecting average contributions totaling 8.03 per cent. Before deciding what benefits a retirement system shall include, an actuary should determine the costs so that contributions may be easily allocated and reasonable pension limits maintained.

The main object of a pension plan is the superannuation benefit, the report points out, although disability and death benefits are important considerations. While the retirement age may differ with occupation, sex and even locality, it should be determined on the basis of duration of useful service. An earlier retirement age affects costs adversely.

The actuarial reserve plan preserves an equilibrium between benefits and costs by computing the payments necessary to meet future obligations, the report finds. Small-scale retirement systems generally are not workable because of the administrative expense necessitated. Only New York and New Jersey have procedures whereby small city pensions may be incorporated into a state-wide plan.

Recent City Manager Appointments

RENWICK ANDERSON has replaced William J. Blake as City Manager of Newburgh, N. Y.

A. E. Fuller, former Director of Finance, has replaced A. D. F. Bloodworth as City Manager of Miami, Fla. Mr. Bloodworth takes the position of Assistant City Manager.

Bob Lines, City Manager of Walters, Okla., from 1927-1931, has been reappointed City Manager of that city. He replaces Andy Carver.

James F. McCrary, former Manager of Bristol, Va., has been appointed City Manager of Big Stone Gap, Va., to succeed G. W. Shaw.

Harold C. Pike, former Secretary of the Board of Commissioners, has been appointed first Township Manager of Cheltenham Township, Pa.

James Q. Palmer has been appointed first City Manager of Jacksonville Beach, Fla.

W. B. Preer has succeeded M. S. Couch as City Manager of Daytona Beach, Fla.

Robert Runyon has succeeded Z. A. Rosenthal as City Manager of Brownsville, Texas.

Gerald W. Shaw, City Manager of Big Stone Gap, Va., has been promoted to the position of first City Manager of Hazard, Ky.

David Walton, former Sheriff and ex-Chairman of the Maine Liquor Commission, has been appointed City Manager of Auburn, Maine, to succeed F. W. Ford, Jr., who had served that city for twelve years.

CLARENCE E. RIDLEY,
Director, International City Managers' Association.

The Municipal Bond Market

A FIVE-YEAR comparison of prices and yields of state and municipal bonds has been made available by the Chemical Bank and Trust Co., of New York. For twenty selected long-term bonds this tabulation shows average prices and yields as follows:

December, 1933	92¼	5.18%
December, 1934	108⅜	3.84%
December, 1935	117⅝	3.15%
December, 1936	124⅜	2.65%
December, 1937	119⅛	2.94%

The following are recent sales of new issues, reported in the January issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$100,000	West Hartford, Conn., Library	1.5	2-11 Ser.	1.46
150,000	Altoona, Pa., School	2.25	2.66 Avg.	2.05
100,000	Vanderburgh Co., Ind., Courthouse Refunding	2.25	6.24	2.16
124,000	Hammond, Ind., Judgment Funding	3	10.85 Avg.	2.77
360,000	Minneapolis, Minn., Sewage-Disposal System	2.8	16.5 Avg.	2.78
200,000	California, Harbor Improvement	4	17.5-52.5 Opt.	2.85
231,000	West Orange, N. J., Sewer Funding	3	12.25 Avg.	2.89
100,000	Charleston, S. C., Building	3	7.75 Avg.	2.95
1,000,000	Norfolk, Va., General Improvement	3	11.33 Avg.	2.99
3,700,000	Cuyahoga Co., Ohio, Bridge	3.5	13.5 Avg.	3.36
1,400,000	Buffalo, N. Y., Home Relief, City Contribution—Relief Project	3.5	1-10 Ser.	3.44
100,000	Abilene, Texas, Water Revenue	4	16.16 Avg.	4.35

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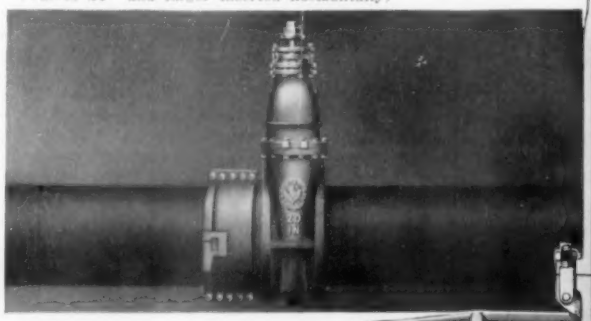
SMITH TAPPING AND INSERTING MACHINES need no introduction to the water works field. This new book is a textbook on SMITH equipment and accessories for this work, comprising photos, blueprints and other data that will enable you to pick exactly the machine and tools that will do any given size of work most economically and efficiently. It's new. It's modern. It contains results of nearly fifty years' experience, directions for operating; in short, all the information you need to get best results at lowest cost. *Send for your copy today.*

Completion of the Insertion of a 20" Valve
(Valves 24" and larger inserted horizontally)



As pipe lines grow older,

the need for new free-working valves becomes greater and greater. The very age of the lines makes it far more likely that they may develop a fault. Then the necessity for local shut-offs will be imperative; but only local valves make them possible. Even if there are valves on the lines, it is more than likely that they are not in perfect working condition.

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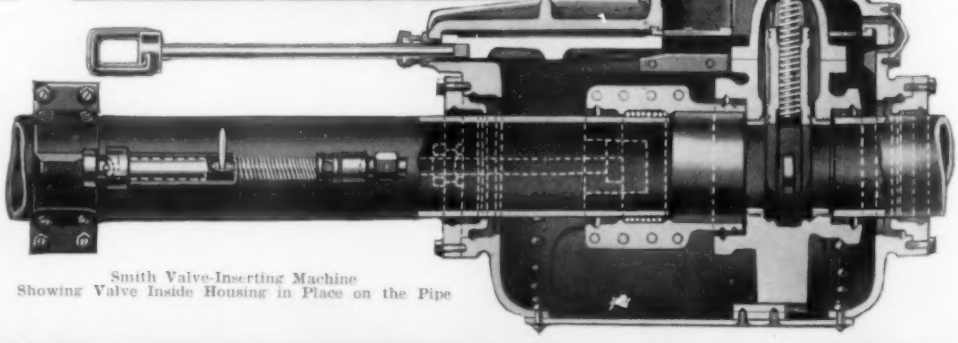

Smith Valve-Inserting Machine
Showing Valve Inside Housing in Place on the Pipe

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning: The Laws, Administration and Court Decisions During the First Twenty Years"

Cities—Annexation of Neighboring Land

MINNESOTA.—*State ex rel. Town of Stuntz v. City of Chisholm;* town of Bulkcin et al, intervenors. 273 N. W. 235 (Supreme Court. June 4, 1937).*—This case does not fall within planning law, but has one or two collateral references of interest to planners.

The village of Chisholm was situated in an iron ore range. A portion was platted, and all the residential, business and other non-mining developments were in that platted portion. Outside of the village limits and located in neighboring towns (townships) were areas devoted exclusively to iron ore mining. They were uninhabited and useful for no other purpose. Between the platted portion of the village and these outside areas was a large area within the village limits but utterly uninhabited and used exclusively for dumping of slack and other accessories or by-products of mining in said outside territory. The population of the village was declining. The village, however, was not lacking in "nerve." It converted its legal status into that of a city and proceeded to annex the said large areas in the townships, the motive being to seize for itself and thereby take from the townships the tax revenues from these outside ore lands.

The question with which the Court dealt was whether this annexation was valid, and that was held to turn upon whether these areas proposed to be annexed were needed for urban or suburban development. The Court invalidated the annexation, and the facts simply supported the decision. The opinion contains some exceedingly able expressions of the tests for the determination of whether land is urban, suburban or needed for urban development.

One item of interest to planners is that, amongst the experts heard upon the question of urbanization, were "city planners." The city had proceeded to include the annexed lands in its charter and zoning ordinance, and claimed that this itself made the territory urban. The Court made short shrift of this argument.

* From the News Letter of the American Society of Planning Officials.

EDITOR'S NOTE.—The statutes of the different states vary greatly in their provisions with regard to the inclusion, by incorporation or annexation, of land, in cities. The statutes of Minnesota provide for such inclusion by vote of the inhabitants, but do not specifically place any limits on it with regard to area or condition of the territory. Previous Minnesota cases, however, have held that in the nature of things there must be a limit; it must be urban in character and properly conditioned for municipal government. The present case applies these limitations to the facts in a most interesting manner.

Extension of Non-Conforming Use

NEW YORK.—*Matter of Pisicchio*, Supreme Court, Queens County, reported in *New York Law Journal*, November 8, 1937, page 1557.—This is a motion to review the decision of the Board of Appeals of the village of Freeport, Nassau County.

In 1923 a coal-yard, conducted as a non-conforming use on the premises in question, sold coal from the premises in 100-pound bags, and stored on the property, to accommodate such sales, about two tons. In 1937 this yard sold coal by the ton, and in larger quantities, from the premises, and stored thereon about 10 tons to accommodate such trade. The Board of Appeals sustained the Superintendent of Buildings in directing the petitioners to discontinue using their premises for coal-yard purposes; and this Court denies their motion to review that decision.

The question is: May a non-conforming use be enlarged and improved without limitation simply by continuing the same descriptive name for the business? It would seem that there must be some limitation. Unless owners of non-conforming uses in zoning areas are required to adhere to the accepted use in volume of trade as well as character of business, zoning laws will be rendered ineffectual. Where is the extension in this case to end? There must be a time when a growing non-conforming use ceases to be the same use; and, in the opinion of the Court, petitioner's coal yard arrived at that stage long ago.

EDITOR'S NOTE.—To the same effect are the New Jersey case of *Home Fuel Oil Co. v. Borough of Glen Rock*, and the New York case of *Matter of Vogl*, in our Notes for October, 1937.

Ordinance—Side Yards

WISCONSIN.—*Welfare Building and Loan Association v. Krieger*, 275 N. W. 891 (Supreme Court, November 8, 1937).—In 1928 Michael Shapiro became the owner of Lots 7, 8 and 9 in Richter's Subdivision No. 2 in the city of Milwaukee. Thereupon he secured permits for the construction of two apartment buildings, one to be built partly on lots 7 and 8, the other partly on lots 9 and 8. Instead of proceeding in this manner, Shapiro located one building entirely on lot 7, and the other entirely on lot 9. At this time Shapiro mortgaged lots 7 and 9 to the Welfare Building and Loan Association for construction loans. The Building Inspector, upon learning that the buildings were so located, called Shapiro's attention to the fact that there would not be proper yard space on each side of lots 7 and 9; but, Shapiro being owner of lot 8, the Building Department ruled that the necessary side yards were furnished by lot 8. It is alleged that Shapiro agreed and allocated portions of lot 8 for side-yard purposes, so as to comply with the zoning ordinance.

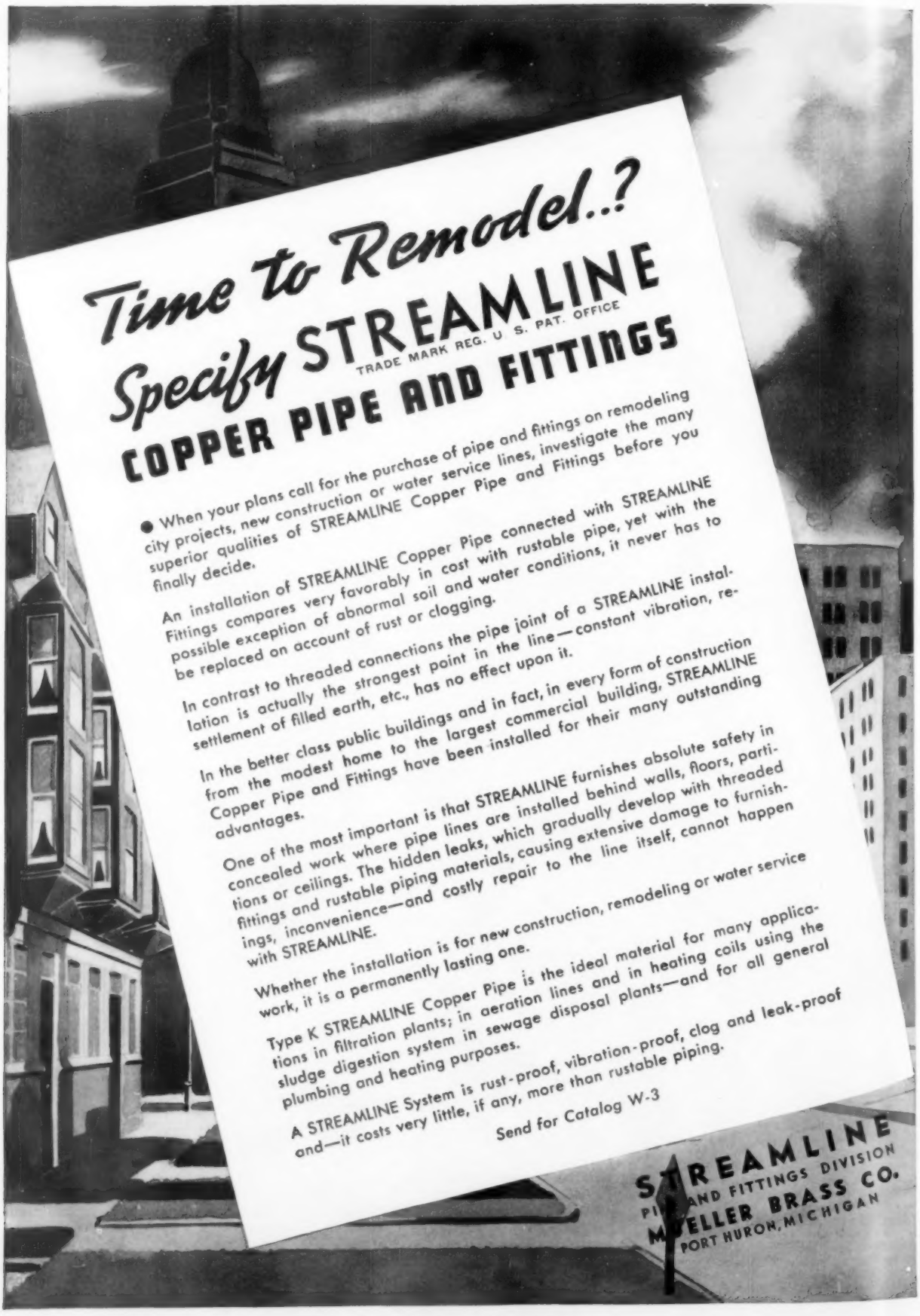
After the buildings were completed, Shapiro gave the defendant Krieger a mortgage, and subsequently a quit claim deed, of lot 8. It is alleged that Krieger, prior to taking the mortgage and quit claim, had examined the property and knew of the location of the buildings. The alleged agreement of Shapiro to allocate portions of lot 8 for side yards for the buildings on lots 7 and 9 was not in writing or recorded. Krieger now made an application for a permit to build on lot No. 8, which was denied by the Building Inspector. Krieger then appealed from that decision to the Board of Appeals, which sustained the Building Inspector, and Krieger took no appeal.

It is alleged that the Building Inspector made a claim that the sale of lot 8 to Krieger voided the occupancy permits on lots 7 and 9, and threatened a prosecution under the ordinance. It is also alleged that Krieger threatened an action to quiet his title to lot 8. Krieger claims that, the zoning ordinance requiring side yards being in effect at the time of the execution to the Welfare Association of the mortgages of lots 7 and 9, the Association should have procured from Shapiro, who then owned all three lots, a grant of portions of lot 8 for side-yard purposes for the buildings on lots 7 and 9 and recorded it, or have included these portions of lot 8 in its mortgage; and that, having neglected to do so, it has no standing in this Court.

Krieger further says that he is owner of lot 8; and claims that the Association, not having any legal title to any part of lot 8, cannot obtain an injunction restraining him (Krieger) from bringing an action to quiet title, or any other action affecting the title to the north 5.75 feet and the south 4.5 feet of lot 8 (the portions needed for side yards for buildings on lots 7 and 9), or from using these portions of lot 8 for purposes other than as side yards.

The Welfare Association makes no claim of legal title to any part of lot 8, but does claim the right to use parts of it for side-yard purposes. Attention is also called to the fact that Krieger's demurrer is an admission of material facts; and that he did not appeal from an adverse decision of the Board of Appeals.

And this Court decides in favor of the Association on the ground that one who takes land as Krieger did, with notice, actual or constructive, of an easement, takes subject to that easement.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The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City's possession of full knowledge as to time, place, cause and nature of injury resulting from street defect held not to excuse damage claimant from giving statutory notice (Indiana Supreme Court: *City of Indianapolis v. Uland*, 10 N. E. 2d, 907).

Municipality held not relieved from liability for failing properly to maintain a sidewalk because street had been designated as part of a state highway, the thoroughfare being a street as well as a highway (Pennsylvania Superior Court: *O'Brien v. Borough of Jeanette*, 194 Atl. 314).

Verdict finding that rut 5 to 7 inches deep, 14 to 18 inches wide and 200 feet long was a highway defect, rendering city liable for wagon tipping over, upheld (Wisconsin Supreme Court: *Blaschke v. City of Watertown*, 275 N. W. 528).

Volunteer fireman held entitled to award under Workmen's Compensation Act for injury while operating floodlight truck under Fire Chief's direction at public celebration (California District Court of Appeal: *Chavoya v. Industrial Accident Commission*, 72 Pac. 2d, 236).

Motorist injured when car was driven across dip in pavement held not entitled to recover against city (Oklahoma Supreme Court: *Oklahoma City v. Cantrell*, 72 Pac. 2d, 381).

City held liable for accidental shooting of child in park by boy, where city was shown to have had at least constructive notice of long-continued and promiscuous shooting in the park and took no steps to abate the resultant danger (Pennsylvania Superior Court: *Stevens v. City of Pittsburgh*, 194 Atl. 563).

Alleys

Public held not to have acquired a prescriptive right to use a strip of private ground as a connection between two alleys where the landowner had merely permitted use of the strip for the convenience of his neighbors and friends (North Carolina Supreme Court: *Hemphill v. Board of Aldermen of Forest City*, 193 S. E. 153).

Annexation Proceedings

Court held not empowered to substitute its judgment for that of County Board and City Council as to the expediency of proposed annexation of territory to city, unless the Board and Council abused their discretionary power (Ohio Court of Appeals, Lucas County: *Decker v. City of Toledo*, 10 N. E. 2d, 955).

Bond Issues

Under statutes, funds insufficient to pay all street improvement bonds of given series held properly prorated over entire series regardless of maturity dates (Kentucky Court of Appeals: *The Maccabees v. City of Ashland*, 109 S. W. 2d, 29).

Although refunding bonds ordinarily may issue without electoral approval, held that such approval was required where an original bond issue was secured by a limited tax and the refunding issue was to be secured by an unlimited tax (Florida Supreme Court: *City of Fort Myers v. State*, 176 So. 483).

Bribery

Police sergeant held within statute penalizing acceptance of bribes by "executive officers" (Oregon Supreme Court: *State v. Coffey*, 72 Pac. 2d, 35).

Civil Service

Mandamus, not a suit in equity, held proper legal remedy available to police officer to secure reinstatement after wrongful discharge. Burden held on him to prove that removal was not made in good faith (Oregon Supreme Court: *Moulton v. Logan*, 72 Pac. 2d, 64).

Contracts

City's call for bids to furnish incandescent lamps held not invalidated by specifications calling for lamps obtainable from one ultimate source only (Washington Supreme Court: *Smith v. City of Seattle*, 72 Pac. 2d, 588).

City held empowered to employ special counsel to represent it and its officials in a statutory investigation of its affairs (New Jersey Supreme Court: *Osborne v. Murphy*, 194 Atl. 551).

Statute permitting abandonment of municipal improvement project on ground of excessive cost held not to release municipality from liability for breaking contract because of inability to finance the project (New Jersey Court of Errors and Appeals: *Pehle v. Saddle River Township*, 194 Atl. 553).

Judgments

City held not subject to compulsion to pay judgment out of funds appropriated for other purposes (Illinois Appellate Court: *People v. City of Chicago*, 10 N. E. 2d, 832).

Municipal Utilities

Statute held not to authorize 15 per cent of electors to require resubmission at a new election of a question whether an electric plant should be acquired where the acquisition had been authorized by the electorate (Wisconsin Supreme Court: *Henderson v. Hoesley*, 275 N. W. 443).

Official Removals

Councilman held removable for voting funds for materials on WPA project in which he was employed as foreman, regardless of fraudulent intent (Pennsylvania Common Pleas Court, Luzerne County: *Commonwealth v. Shelhimer*, 29 Pa. Mun. Law Rep. 14).

Pensions

Amendatory statute reducing annuities payable to retired teachers under compulsory age retirement law held not unconstitutional as impairing a vested contract right (United States Supreme Court: *Dodge v. Board of Education of City of Chicago*, 58 Sup. Ct. 98).

Erroneous payment of pension to disabled policeman not entitled to same held not to preclude subsequent denial of pension to him and his widow (Indiana Supreme Court: *Kern v. State*, 10 N. E. 2d, 915).

Police Measures

Ordinance forbidding marathons and similar contests upheld, although statute made less drastic provision (Wisconsin Supreme Court: *Fox v. City of Racine*, 275 N. W. 313).

Public Utilities

Telephone company held not to have shown a right to set off against a borough's claim for pole rentals a claim for joint use of poles by the borough (Pennsylvania Common Pleas Court, Lawrence County: *New Wilmington Borough v. New Wilmington Telephone Co.*, 29 Pa. Mun. Law Rep. 28).

Salaries

Where a police officer's salary was required to be fixed by ordinance, his acceptance of checks for a smaller amount held not to preclude his recovery of the excess, the checks not being tendered as payment in full (Pennsylvania Common Pleas Court, Montgomery County: *Bangert v. Borough of Bridgeport*, 29 Pa. Mun. Law Rep. 33). But city officials charged with submitting estimates of their city's financial needs, including funds to cover their own salaries, are precluded from claiming an excess of salaries due them under the city charter by voluntarily accepting salary reductions (Oklahoma Supreme Court: *City of Sand Springs v. Kraus*, 72 Pac. 2d, 726).

One elected municipal judge held entitled to salary during time he was excluded from office by opponent to whom election certificate was granted (Illinois Supreme Court: *McKinley v. City of Chicago*, 10 N. E. 2d, 689). (Ed. Note.—The Court cites many decisions from different jurisdictions showing a conflict of authority on the right of a municipal officer to recover salary for time while excluded by a de facto officer.)

Sidewalk Grades

Abutter held entitled to build sidewalk at any reasonable grade in absence of municipal establishment of grade (Pennsylvania Common Pleas Court, Somerset County: *Somerfield Borough v. Cuppett*, 29 Pa. Mun. Law Rep. 18).

Special Assessments

Owner of property assessed for local improvement held not to excuse his non-attendance before city board, where he might have complained of the assessment in due time, on the ground that he was misled as to the board's intended course of action (Indiana Appellate Court: *Bachelder v. Harshbarger*, 10 N. E. 2d, 927).

Street Improvements

Where a 134-foot parkway existed in the middle of a street, city held not liable for any part of cost of improving the adjacent roadways as an abutting owner, although swimming pool, etc., were maintained on the parkway (Oklahoma Supreme Court: *Yeaman v. Oklahoma City*, 72 Pac. 2d, 357).

Streets

Borough held empowered to require excavators in streets to resurface the same at their expense, and to require an advance deposit varying according to the nature of the excavation (Pennsylvania Court of Quarter Sessions, Schuylkill County: *Frackville Sewerage Co. v. Jones*, 29 Pa. Mun. Law Rep. 37).

Road in city constructed by county on its own land to afford access to county fair grounds held not to have been dedicated to such public use as empowered city to levy assessments against the county for paving the road (Nebraska Supreme Court: *City of McCook v. Red Willow County*, 275 N. W. 396).

Taxation

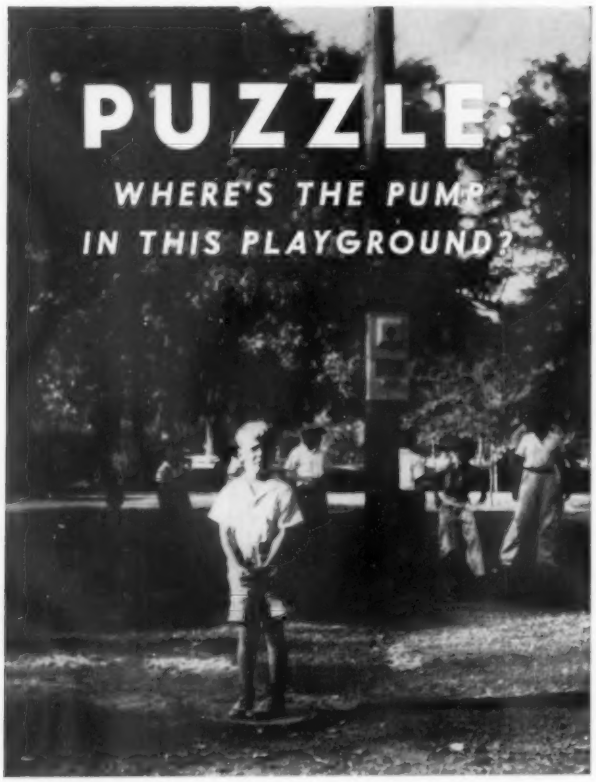
Statute exempting bonds of state and its subdivisions from taxation held not to preclude inclusion of interest as part of income of holder subject to local taxation (United States Supreme Court: *Hale v. Iowa State Board of Assessment and Review*, 58 Supt. Ct. 102).

City's delay for fifteen years in suing held fatal to a claim against the county and a railroad company for gross receipts taxes under company's franchise, paid to county after city had annexed territory in which company operated (California Supreme Court: *City of Los Angeles v. Los Angeles County*, 72 Pac. 2d, 138).

City held not entitled to recover from County Treasurer amount of tax delinquency penalties that had been paid on property in city but had not been demanded by city before enactment of a statute authorizing refund of such penalties, where the fund had not been appropriated or involved in contracts by the city (Oklahoma Supreme Court: *City of McAlester v. Jones*, 72 Pac. 2d, 371).

Trust Funds

Mere fact that funds given to a city in trust for a public charity are under control of a special board of trustees held not to diminish a city's legal ownership of funds. City also held to have title to statutory pension and retirement funds, etc., despite administering control of various boards (Massachusetts Supreme Judicial Court: *City of Boston v. Dolan*, 10 N. E. 2d, 275).



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Municipal Bonds

The ABC of Municipal Bonds.—By Louis S. Lebenthal. Published by Harper & Brothers, New York. 1937. *viii* + 166 *pp.* $1.50 *from* THE AMERICAN CITY.

Here is a book written about municipal bonds which the novice at investment can comprehend. It is written without technical or legal terms by a man of experience in dealing with municipal bonds. It is sufficiently instructive to be of interest to municipal bond salesmen and town and village officials as well as laymen. Part I of this volume is entitled "Life History of a Municipal Bond," and Part II, "The ABC's," and together they include enough informative material to give the reader a better comprehension of the nature of the municipal bond and its place in municipal finance.

Low-Cost Housing

"An Analysis of the Problem of 'Low-Cost Housing for the Lower Income Group,'" by George F. Lindsay, is essentially a presentation of the possibilities of standardization in house building as the greatest potential method of cost reduction. First, he indicates the problem, showing the discrepancy between incomes and house costs. Then he discusses what he thinks are the only conditions under which low-cost housing can ever be built, i.e., standardization of every possible part and fixture of a house. In Part II of the study he makes some definite suggestions as to the type of standardization necessary: the use of rough carpentry cut to fit at the sawmill, standardized foundation block, standardized wall board, standardized plumbing, heating and electrical equipment. He even suggests that Du Pont produce some kind of substance to be sprayed over the inside and outside of a dwelling which would be more economical than present painting methods, yet equally good protection. Finally, Mr. Lindsay makes some interesting observations on the labor question and on the statements of various leaders in the housing field in regard to standardization. 80 pp. (Apply to George F. Lindsay, Office of Frederick Weyerhaeuser, First National Bank Bldg., St. Paul, Minn.)

Urban Population Data

The National Resources Committee has now completed publication of its "Population Statistics" series, with the appearance of "Urban Data," following "National Data" and "State Data." "Urban Data" points out the tendency toward rapid urban growth in the western countries based on four underlying conditions: improvement in agricultural efficiency; development of power-machine industry; power transportation; and modern sanitation. The variations in growth of urban population are given, and its composition is analyzed. The emergence of the metropolitan region and its significance as a population center and as an economic unit is discussed. 52 pp. 15c. (Apply to the Supt. of Documents, Washington, D. C.)

Housing Personnel

The Committee on Personnel Standards of the National Association of Housing Officials has published a report entitled "Administrative Personnel for Local Housing Authorities." In the present mad scramble to participate in the new low-rent housing program of the Federal Government, local authorities are encountering the many problems inevitable in a new field, of which the first is that of personnel. This pamphlet has been produced in advance of accumulated experience of a precise nature in the hope that it may be of assistance at the very beginning. It is in two sections, the first a general statement of principles, broadly applicable, and the second an outline of duties and qualifications for the key positions of executive director of the housing authority, technical director, director of the management division, and resident housing manager. 14 pp. 25c. (Apply to the National Association of Housing Officials, 850 E. 58th St., Chicago, Ill.)

Essex County Government

Twenty Years of Government in Essex County, New Jersey, An Object Lesson in Reform Government.—By Thomas H. Reed, LL.D., Director of the Consultant Service, National Municipal League. Published by D. Appleton-Century Co., Inc., New York. 1938. *x* + 183 *pp.* $2.00 *from* THE AMERICAN CITY.

In any study of county government in general, an intelligently analytical and complete record of the activities of a particular county over a period of years should be considerably enlightening. Such a record should also be of tremendous interest to the citizens of the county directly concerned. In the first chapter of this work, the author presents some of the background facts of Essex County. The second chapter describes the governmental structure of the county, and the third an era of serious corruption. With the fourth chapter begins the interesting story of reform which makes Essex County a particularly valuable study. A citizens organization, an intra-party movement under competent leadership, courted the electorate with honest promises of cleaner government, and its success has been notable. Mr. Reed cites the concrete improvements brought about by this reform movement over the past 15 years, and he finishes his analysis with a description of the Essex County institutions and an evaluation of county government finance in Essex County in comparison with that of several other counties in New Jersey and the New York metropolitan area.

Traffic Accidents

Comprehensive progress reports of four traffic committees of the National Safety Council were presented at the recent National Safety Congress. One of these reports, "Speed and Accidents," was reviewed in these pages last month. The other three are entitled "Tests for Driver Intoxication," "Pedestrian Control and Protection," and "Night Accident Hazards." The first of these three deals with the relationship of drinking by drivers and pedestrians to traffic accidents and studies the possibilities and methods of dealing with those found responsible for such accidents. The second points out that the greatest number of traffic deaths result from collisions between pedestrians and motor vehicles, and cites methods of accident reduction through more effective traffic control devices and better safety education. The third progress report notes the recent increase of night accidents and makes an analysis of the factors contributing to these accidents, as the first step toward suggesting ways of making night travel safer. None of these reports are final or conclusive, and the committees will present further and more complete data next year. 32, 9, and 9 pp. respectively. (Apply to the National Safety Council, 20 North Wacker Drive, Chicago, Ill.)

Tax Rate Book

The League of Kansas Municipalities has been publishing annual tax books since 1919. The "1937 Tax Rate Book" contains tax rates and operation statistics for the 587 cities, the 587 city schools and the 105 counties of Kansas. The analyses are grouped according to population in order to give public officials an opportunity to make comparisons of their own cities with others of like size and ability to finance public enterprises. 27 pp. $2.00. (Apply to the League of Kansas Municipalities, Lawrence, Kans.)

The Case Worker Interprets

"The Case Worker Interprets" is an interesting description of the publicity efforts of case work groups which have employed no professional or semi-professional publicity help, in eight cities. Experience in writing, broadcasting, movie making, organizing meetings and editing news is recounted, and the suggestions that can be gleaned from their successful efforts should be stimulating to new groups in case work and other fields. 16 pp. (Apply to the Social Work Publicity Council, 130 East 22nd St., New York.

Public Ownership and Control

British Experiments in Public Ownership and Control.—By Terence H. O'Brien, Sometime Exhibitioner of Magdalen College, Oxford, and Instructor of Government, Harvard University. Published by W. W. Norton & Co., Inc., New York. 304 *pp.* $3.00 *from* THE AMERICAN CITY.

The Central Electricity Board, the British Broadcasting Corporation, and the London Transport Board, are three living models of the semi-autonomous public body. Since this form of modified government control may prove to be the answer to the arguments over the conflict between democracy and efficiency in the administration of public enterprises, this thorough presentation of the problems which these three existing institutions have uncovered of a political and administrative nature in their practical operations should be extremely enlightening to those concerned and interested in this timely subject.

Mosquito Extermination

The Nassau County Extermination Commission has published a pamphlet in popular style on "Mosquitoes, Their Life History and Control." It does not bury the subject in scientific language, but tells clearly and interestingly the facts of the breeding and development of mosquitoes and the ways of mosquito control. They must be exterminated in their early stages, which involves the elimination or spraying of all stagnant water. Mosquitoes have been largely expelled from Nassau County, N. Y., except for those that breed around houses in improperly covered cesspools, tin cans or old automobile tires holding water, ornamental pools, and other standing waters. Here is where the individual home owner can really help in the elimination of this plague and the diseases it can bring. 32 pp; illustrated. (Apply to the Nassau County Extermination Commission, District Office, 75 Lee Ave., Rockville Centre, N. Y.)

A Municipal Reference Library

The Memphis Municipal Reference Library will be two years old this spring. In this short time its library material and its activities have increased by leaps and bounds, which makes the story of its early growth particularly interesting. "Putting Print Into Service—Around the Year with Your Municipal Reference Library" is the 1937 annual report of this infant institution. It presents a brief description of how the Library has accumulated material and how it has made that material available to government officials and others. Circulation statistics are given. Additional extraordinary activities of the Library are described and include dissemination of municipal news for publication in local newspapers and regional and national magazines; responsibility for publication of the *Memphis Municipal News* and three special booklets entitled "Six Years of Progress in Memphis Parks and Recreation," "When You Build," and "Municipal Progress in Memphis from Frontier Post to Modern City"; and the display of a number of different exhibits. (Apply to the Municipal Reference Library, Memphis, Tenn.)

The Costigan Amendment

"The Costigan Amendment" is a pamphlet dealing with a bill of that name passed in Congress about three years ago to allow state and local assessors to study the information contained in Federal income tax returns for the purpose of aiding them in equitable local assessments. It is a guide for local assessors and state tax officers in the methods of gaining access to the Federal information, transcribing it, and making the best use of it. Examples are given of the outcome where the privilege has actually been used. Finally, a warning is given of the possibilities of misuse or incorrect interpretation of the information acquired. 22 pp. 50c. (Apply to the National Association of Assessing Officers, 850 E. 58th St., Chicago, Ill.)

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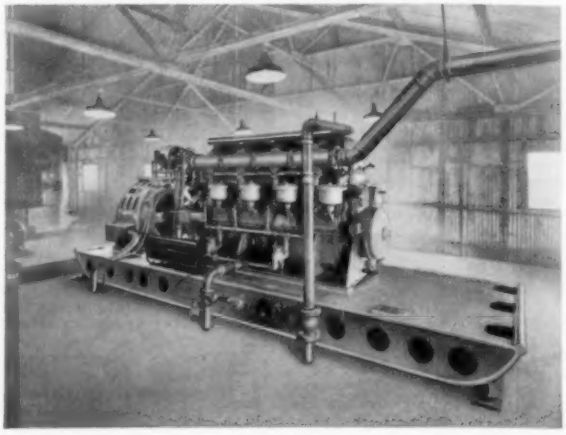

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A Social Study of Pittsburgh

A Social Study of Pittsburgh; Community Problems and Social Services of Allegheny County.—By Philip Klein, of the New York School of Social Work, and collaborators. Published by Columbia University Press, New York. 1938. xxviii + 858 pp. $4.75 *from* THE AMERICAN CITY.

This volume is not a sociological survey, but a social work survey. Its main purpose is to examine existing agencies and institutions, public or voluntary, which provide social and health services within the selected area. However, a substantial section (Part I) of the book is devoted to the social and economic characteristics and trends of the community as the background and very stuff from which social work finds its excuse for existence. Social work has become an integral part of our community life by virtue of the great needs of a large section of our population. The specific problems dealt with in "Part II: Social Services and Health Services for Allegheny County" are cost and support of social work, planning and coordination of social work, relief and social case work, social work for children, organized care of the sick, leisure-time activities, and several others. It is hoped by the authors of this report that it will have some national significance, since much of the discussion and exposition goes beyond the purely local problem.

Local and State Government

The Institute of Local and State Government, located at the University of Pennsylvania, Philadelphia, has recently published two interesting studies. The first is entitled "A Report on Real Property Assessments in Philadelphia" and was prepared especially for the Philadelphia Charter Commission. The introduction provides a brief statement of the meaning of property assessment, and the following sections analyze the legal and administrative set-up in property assessment in Philadelphia before and during 1937, provide considerable data for Philadelphia and some notes on other cities for comparative purposes, and, finally, cite a number of alternative proposals for future assessment policy of the city. The second publication is entitled "City-State Relations" and deals in particular with the governmental relations between the state of Pennsylvania and the city and county of Philadelphia. After considerable analysis of the situation, the report notes the possibilities and methods of increasing the control of the city over local matters. 44 and 65 pp. respectively. Free distribution in limited number. (Apply to the Institute of Local and State Government, 406 Logan Hall, University of Pennsylvania, Philadelphia, Pa.)

Industry and the Community

"The Economic Relation of an Industry to Its Community" is an interesting study by William Stanley Parker, prepared by him as a special consultant for the Research Committee on Urbanism of the National Resources Committee. The economic relation of the industry to its community is pictured on a balance sheet showing taxes paid by the industry and the families of its employees and the cost of municipal services rendered. Also the direct taxes resulting from the secondary spendable income created in the community by the expenditures of the industry. The factors considered in the analysis are confined to economic factors measurable in monetary values. 46 pp. (Apply to the Massachusetts State Planning Board, Room 24, State House, Boston, Mass.)

Social Security

"Social Security, Progress and Prospects," edited by Zilpha C. Franklin, is a compilation of five papers dealing in particular with the relationship of the Federal Social Security Act to local government. It involves changes in local expenditures in the welfare field, a shift in the tax burden, and various administrative alterations and innovations. The titles and authors of the articles are: "Progress and Prospects Under the Social Security Act," by Frank Bane; "Public Assistance and Municipal Welfare Problems," by Zilpha C. Franklin; "Interstate Problems in Social Security," by A. J. Altmeyer; "State Plans for Unemployment Compensation," by R. Gordon Wagenet; and "Developments in the Old-Age Benefit Program," by LeRoy Hodges. 31 pp. 50c. (Apply to the National Municipal League, 309 E. 34th St., New York.)

British Local Government

The Local Government of The United Kingdom and The Irish Free State.—By John J. Clarke, M.A., F.S.S., of Gray's Inn and the Northern Circuit, Barrister-at-Law, Legal Member of the Town Planning Institute. Published by Sir Isaac Pitman & Sons, Ltd., Pitman House, Parker St., Kingsway, London, W.C.2, England. Eleventh edition. 1937. xx + 907 *pp.* 15/.

This single volume contains an amazingly comprehensive study of England's local government in its "million-and-one" manifestations. The coverage is indicated by the headings of the eight sections into which the text is divided: "The State in Relation to Local Government"; "Local Authorities in England and Wales"; "Public Health, Public Undertakings, and Public Protection" (including housing, town planning, agricultural act, and public utility undertakings); "Transport"; "Education and Moral Improvement"; "Public Assistance"; "Local Finance"; and "Special Legislation." An extensive bibliography is included. The author of this valuable book has been forced to keep it up to date through the pressure of demand for its useful presentation of government facts.

Public Documents

The American Library Association has been devoting a series of pamphlets to the various problems of public documents. The papers presented on this subject at the 1937 Conference of the Association are now published under the title of "Public Documents 1937 with Archives and Libraries." The first section reviews existing legislation pertaining to document distribution and discusses the work and publications of fourteen national organizations concerned with problems of the Government, the document problems of many different types of depositary centers and depositaries and other aspects of the problem. The history and development of archival work and the organizations and functioning of various archival agencies is discussed in the second part of the publication. 305 pp. $3.25. (Apply to the American Library Association, 520 N. Michigan Ave., Chicago, Ill.)

A City Planner Looks at Buffalo

"A City Planner Looks at Buffalo" is the title of the first public address by Dr. Walter Curt Behrendt in his position as Technical Director of a new Planning Research Station jointly sponsored by the University of Buffalo and the Buffalo City Planning Association. In it he analyzes the main functions of city planning, describes the new Institute, gives a summary picture of his conclusions on Buffalo's problems and possibilities gathered in a two-months acquaintance with the municipality; and, finally, pleads for a new civic spirit which will make possible the whole-hearted response of the citizens of Buffalo to a program of planning for the invigoration of their city. 4 pp. (Apply to the Buffalo City Planning Assn., Buffalo, N. Y.)

Construction Industry Statistics

The November-December, 1937, issue of *Construction* is devoted to "Construction Industry Statistics." Leaders in the fields of Federal, state, and municipal planning and public utilities have contributed papers, each showing the need for a complete and sound factual basis for their construction programs. The persons present at the meeting at which these papers were presented adopted a resolution in support of a drive for complete construction industry statistics including a plan to solicit the aid of the various government departments concerned with the problem. 26 pp. (Apply to the Construction League of the United States, 1741 New York Ave., N.W., Washington, D. C.)

Alley Dwelling Authority

"Report of the Alley Dwelling Authority, 1937," describes the progress of that body toward its objective of reclaiming 176 squares containing inhabited alleys in Washington, D. C. So far eleven squares have been reclaimed. Four are being devoted to low-rent housing projects, two of which are completed and occupied and two of which are under contract; five have been developed into non-residential projects; and two sites have been sold. In addition, a number of other squares are in the process of acquisition and development. 20 pp. 10c. (Apply to the Supt. of Documents, Washington, D. C.)

The Diary of a Housing Manager

"The Diary of a Housing Manager," by Abraham Goldfeld, is an extremely interesting and readable contribution to knowledge of the job of manager of the low-rent housing project. It is hard to conceive of the many problems that arise to tax the judgment and common sense of the manager, particularly from the angle of maintaining the best human relationships within the community, involving his ability to win and keep the respect and confidence of the tenants, as well as to prevent and assuage conflicts between different tenants and groups of tenants. This diary is an especially "human" document, relating the day-by-day occurrences at the Lavanburg Homes in New York City as they were originally entered by the manager, and containing later comments on those events for explanatory purposes. In addition to the diary itself, this booklet contains a few pages of description of "The Beginnings of the Lavanburg Homes" and a final "Summary of Activities During the Period of 1931-1937." $1.00. (Apply to the National Association of Housing Officials, 850 E. 58th St., Chicago, Ill.)

Revaluation of Municipalities

A study of tax revaluation through equitable assessment entitled "The Revaluation of Municipalities" was reviewed in the January, 1938, issue of THE AMERICAN CITY. Since The J. M. Clemmshaw Co., author of the publication, has not been located at the address given since July, 1937, we should like to point out its present New York address at the McGraw-Hill Bldg., 330 W. 42nd St. This company has another office in the Union Trust Bldg., Cleveland, Ohio.

Retirement Systems

The tremendous interest at the present time in pesion plans or retirement systems has urged the Municipal Finance Officers' Association into publication of "Retirement Systems for Public Employees." It is important that these pension plans be financially and administratively sound from the beginning or the employees may be seriously disappointed when the day of retirement arrives. This pamphlet is a guide to a sound system, dealing with the following topics: (1) the fundamentals of a sound system; (2) how to establish a retirement system; (3) membership and contribution provisions; (4) benefit provisions; (5) the problem of present employees; (6) administration of a retirement system; (7) the enabling legislation; (8) the cost of a retirement system; (9) the small municipality's problem; and (10) funds and records. 9 pp.; 8 forms. 25c. (Apply to the Municipal Finance Officers' Assn., 850 E. 58th St., Chicago, Ill.)

Public Health Survey

The United States Public Health Service has just published four preliminary bulletins based on a house-to-house canvass of 74,000 families in urban communities in 19 states, and 36,000 families in selected rural areas in 3 states, during the fall and winter of 1935-1936, for the purpose of inquiring into the condition of the nation's health and underlying social and economic factors. The first two bulletins deal with the survey methods and are entitled "Significance, Scope and Method of a Nation-Wide Family Canvass of Sickness in Relation to its Social and Economic Setting" and "Families Distributed by Income During the Survey Year." The next two bulletins, numbered 1 and 2, are concerned with the findings of the survey and are entitled "An Estimate of the Amount of Disabling Illness in the Country as a Whole" and "Illness and Medical Care in Relation to Economic Status." (Apply to the U. S. Public Health Service, Washington, D. C.)

Other Reports Received

ALBANY, N. Y.—"Albany Guide," prepared by the Federal Writers' Project. 28 pp.

COOK COUNTY, ILL.—"Annual Message of Clayton F. Smith, President, Board of Commissioners, and President of the Board of Forest Preserve Commissioners." 1937. 207 pp.

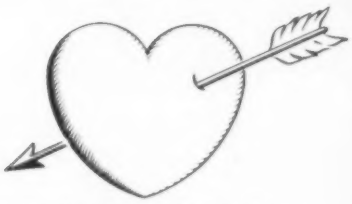
GREENWICH, CONN.—"Police Department Survey, 1937." Public Administration Service, 850 E. 58th St., Chicago, Ill. 130 pp.

NEW YORK, N. Y.—Annual Report, Regional Plan Association, December, 1937. 16 pp.

SEATTLE, WASH.—"Public Utility Franchise Fees and Occupational Tax Rates in Washington Municipalities." Association of Washington Cities. 3 pp.

The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users



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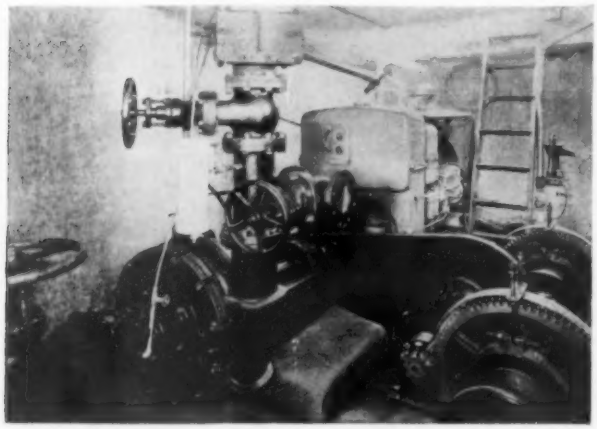

A challenge to Neptune's trident . . . .

At many places along the sea-coast it seems as though old Neptune's trident were a monstrous shovel, gouging out sand at one location and piling it up elsewhere. At Col. R. R. McCormick's West Palm Beach estate, the Morris engineers, in conjunction with Col. McCormick's engineer, Karl S. Riddle, have devised a unique stationary dredging installation which has proved a match for old Neptune. A flexible suction connection reaches all parts of the sand which accumulates against the jetty, and the discharge line from the dredge redistributes the sand properly along the beach. This ingenious and highly successful arrangement would solve the problem of many a sea-coast community. Full particulars on request.

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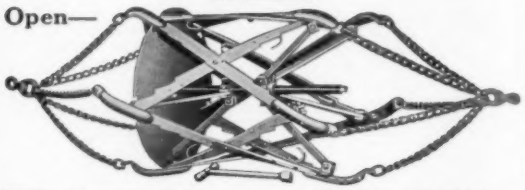

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Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

Meeting is annual convention unless otherwise designated

FEBRUARY 14-19.—COLLEGE STATION, TEXAS. (125)
Texas Water Works Short School. (Agricultural and Mechanical College of Texas.) Sec., V. M. Ehlers, Austin, Texas.

FEBRUARY 15.—NEW BRUNSWICK, N. J.
American Water Works Association—New Jersey section. Meeting. (Rutgers Univ.) Sec., P. S. Wilson, 325 Washington St., Glen Ridge, N. J.

FEBRUARY 15-17.—ANN ARBOR, MICH. (500)
Conference on Highway Engineering—University of Michigan. (Michigan Union Bldg.) Sec., R. E. Morrison, Univ. of Michigan, Ann Arbor, Mich.

FEBRUARY 16-18.—ATLANTIC CITY, N. J. (1,200)
Association of Highway Officials of North Atlantic States. (Hotel Ambassador.) Sec.-Treas., A. Lee Grover, State Highway Commission, Trenton, N. J.

FEBRUARY 22-24.—CHICAGO, ILL. (600)
American Concrete Institute. (Palmer House.) Sec., Harvey Whipple, 407 New Center Bldg., Detroit, Mich.

FEBRUARY 22-25.—WICHITA, KANS.
Southwest Road Show and School. (Wichita Exhibition Bldg.) Mgr., F. G. Wieland, 225 S. Water St., Wichita, Kans.

FEBRUARY 25-MARCH 3.—ATLANTIC CITY, N. J.
American Association of School Administrators. (A Department of the National Education Association.) Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

MARCH 2-3.—NEWARK, N. J. (500)
Eastern Safety Conference. (Essex House.) Mgr., Fred M. Rosseland, 24 Branford Pl., Newark, N. J.

MARCH 10-11.—TRENTON, N. J.
New Jersey Sewage Works Association. (Stacy-Trent Hotel.) Sec., John R. Downes, Bound Brook, N. J.

MARCH 17-18.—JAMESTOWN, N. Y.
American Water Works Association—New York Section. Spring meeting. (Hotel Jamestown.) Sec., R. K. Blanchard, 50 W. 50th St., New York.

MARCH 21-23.—LOUISVILLE, KY.
American Water Works Association—Kentucky-Tennessee Section. (Brown Hotel.) Sec.-Treas., Howard D. Schmidt, 420 Sixth Ave., N., Nashville, Tenn.

MARCH 21-22.—BOSTON, MASS. (2,000)
Massachusetts Safety Conference. (Hotel Statler.) Gen. Mgr., Lewis E. MacBrayne, 80 Federal St., Boston, Mass.

MARCH 23-25.—WINDSOR, ONT.
American Water Works Association—Canadian Section. (Hotel Prince Edward.) Sec.-Treas., Dr. A. E. Berry, Dept. of Health, Parliament Bldg., Toronto 5, Ont.

MARCH 23-25.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. (Hotel Chalfonte-Haddon Hall.) Sec., Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

MARCH 24-26.—LAWRENCE, KANS.
Kansas Water and Sewage Works Association. (School of Engineering—Univ. of Kans.) Sec.-Treas., E. Boyce, State Board of Health, Lawrence, Kans.

APRIL 3-5.—ATLANTA, GA.
Southern Commercial Secretaries' Association. Mgr., Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

APRIL 7-8.—LAFAYETTE, IND.
American Water Works Association — Indiana Section. (Purdue Union Bldg.) Sec., J. A. Bruhn, Box 855, Indianapolis, Ind.

APRIL 11-13.—FAYETTEVILLE, ARK.
Arkansas Water and Sewage Works Conference. (Univ. of Arkansas.) Sec., Harrison Hale, Univ. of Arkansas, Fayetteville, Ark.

APRIL 19-22.—NEW ORLEANS, LA. (500)
The American Institute of Architects. (Roosevelt Hotel.) Exec. Sec., E. C. Kemper, 1741 New York Ave., Washington, D. C.

APRIL 20-22.—ST. LOUIS, MO.
Missouri Association of Public Utilities. (Jefferson Hotel.) Asst. Sec., Jesse Blythe, 101 W. High St., Jefferson City, Mo.

APRIL 24-28.—NEW ORLEANS, LA.
American Water Works Association. (Hotel Roosevelt.) Sec., Harry E. Jordan, 29 W. 39th St., New York.

MAY 2-5.—WASHINGTON, D. C. (2,500)
Chamber of Commerce of the United States. Sec., D. A. Skinner, 1615 H St., N. W., Washington, D. C.

MAY 5-6.—COLUMBIA, MO.
Missouri Association of Mayors and Other Municipal Officials. (Hotel Tiger.) Exec. Sec., George A. Spencer, 412 Guitar Bldg., Columbia, Mo.

MAY 9-12.—ATLANTIC CITY, N. J. (500)
National Fire Protection Association. (Haddon Hall.) M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 9.—DANBURY, CONN.
New England Sewage Works Association. Spring meeting. (Hotel Green.) Sec., F. W. Gilcreas, State Dept. of Health, New Scotland Ave., Albany, N. Y.

MAY 11-14.—NORRIS PARK, TENN.
National Conference on State Parks. Exec. Sec., Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

MAY 13-14.—BOZEMAN, MONT.
American Water Works Association — Montana Section. (Baxter Hotel.) Sec., Herbert B. Foote, State Dept. of Health, Helena, Mont.

MAY 19-21.—SPOKANE, WASH.
American Water Works Association — Pacific Northwest Section. (Davenport Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 23-25.—DAYTONA BEACH, FLA.
American Water Works Association — Florida Section. Sec., J. R. Hoy, 404 Hildebrandt Bldg., Jacksonville, Fla.

MAY 23-26.—ST. LOUIS, MO. (1,500)
National Association of Purchasing Agents. (Hotel Jefferson.) Sec.-Treas., G. A. Renard, 11 Park Pl., New York.

MAY 24-27.—NASHVILLE, TENN.
Smoke Prevention Association. (Andrew Jackson Hotel.) Sec., Frank A. Chambers, 1411 City Hall Square Bldg., Chicago, Ill.

MAY 25.—NEW MILFORD, N. J.
American Water Works Association—New Jersey Section. Meeting. (Plant of the Hackensack Water Co.) Sec., P. S. Wilson, 325 Washington St., Glen Ridge, N. J.

JUNE 7-9.—ATLANTIC CITY, N. J. (2,000)
Edison Electric Institute. M'ng Dir., Bernard F. Weadock, 420 Lexington Ave., New York.

JUNE 7-9.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JUNE 8-10.—ELMIRA, N. Y. (700)
Conference of Mayors and Other Municipal Officials of the State of New York. (Mark Twain Hotel.) Exec. Sec., William P. Capes, City Hall, Albany, N. Y.

JUNE 8-10.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (College Hotel-Nittany Lion.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 13-18.—KANSAS CITY, MO.
American Library Association. Conference. (Municipal Auditorium.) Sec., Carl H. Milam, 520 N. Michigan Ave., Chicago, Ill.

JUNE 13-17.—LOS ANGELES, CALIF.
Institute of Government. (Univ. of Southern California.) Address: Emery E. Olson, Dean, School of Government, 3551 University Ave., Los Angeles, Calif.

JUNE 16-18.—BALTIMORE, MD.
Eastern Association of Fire Chiefs. (Lord Baltimore Hotel.) Sec., Charles E. Clark, Box 217, Wayne, Pa.

JUNE 20-24.—WASHINGTON, D. C.
American Institute of Electrical Engineers. Summer convention. (Mayflower Hotel.) Nat'l Sec., H. H. Henline, 33 W. 39th St., New York.

JUNE 20-22.—HALIFAX, NOVA SCOTIA.
Canadian Public Health Association. Gen. Sec., Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 20-22.—ERIE, PA.
Pennsylvania State Association of Boroughs. Pres., Thomas F. Chrostwaite, Hanover, Pa.

JUNE 21-23.—BURLINGTON, VT.
New England Association of Fire Chiefs. (Hotel Vermont.) Sec., John W. O'Hearn, Watertown, Mass.

JUNE 26-JULY 2.—SEATTLE, WASH.
Joint meeting. (Olympic Hotel.) *American Public Welfare Association.* Dir., Fred K. Hoehler, 850 E. 58th St., Chicago, Ill. *National Conference of Social Work.* Gen. Sec., Howard R. Knight, 82 N. High St., Columbus, Ohio.

JUNE 26-30.—NEW YORK CITY (12,000)
National Education Association of the United States. (Pennsylvania Hotel.) Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

JULY 24-29.—STANFORD UNIVERSITY, CALIF.
Western Conference for Commercial and Trade Executives. (Lagunita Court—Stanford University.) Business Mgr., Leonard E. Read, 433 California St., San Francisco, Calif.

JULY 25-28.—ALLENTOWN, PA.
Pennsylvania Chiefs of Police Association. Sec., F. B. Titus, Lansdowne, Pa.

AUGUST 13-20.—MEXICO CITY.
International Federation for Housing and Town Planning. Congress. Gen. Sec., Donald C. L. Murray, rue Cantersteen 47, Shell Bldg. 608, Bruxelles, Belgium.

SEPTEMBER 12-15.—BALTIMORE, MD.
International Municipal Signal Association, Inc. (Lord Baltimore Hotel.) Sec., Irvin Shulsinger, 7 E. 42nd St., New York.

SEPTEMBER 19-22.—ATLANTIC CITY, N. J.
American Transit Association. (Atlantic City Auditorium.) Gen. Sec., Guy C. Hecker, 292 Madison Ave., New York.

OCTOBER 3-7.—PITTSBURGH, PA.
National Recreation Association. (William Penn Hotel.) Administrative Sec., Thomas E. Rivers, 315 Fourth Ave., New York.

OCTOBER 6-7.—WASHINGTON, D. C.
American Water Works Association—Four States Section. Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary District, Hyattsville, Md.

OCTOBER 10-14.—CHICAGO, ILL.
National Safety Council. (Stevens Hotel.) M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 13-15.—DES MOINES, IOWA.
American Water Works Association — Missouri Valley Section. Sec., Earl L. Waterman, Univ. of Iowa, Iowa City, Iowa.

OCTOBER 17-20.—OKLAHOMA CITY, OKLA.
American Water Works Association—Southwest Section. (Biltmore Hotel.) Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 25-28.—KANSAS CITY, MO.
American Public Health Association. Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 26-29.—RIVERSIDE, CALIF.
American Water Works Association—California Section. Sec.-Treas., Carl M. Hoskinson, Div. of Water, Sacramento, Calif.

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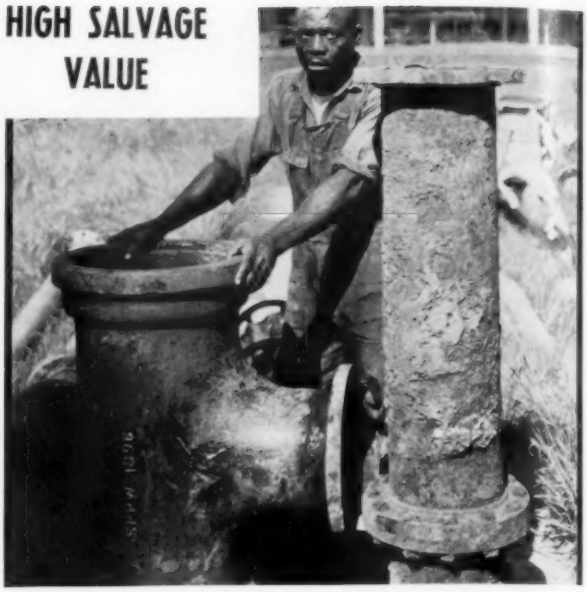

PHOTO shows Cast Iron tee and an outlet flange of a substitute material uncovered during the current rebuilding of the Greenville, Miss., pumping plant. The faithful old Cast Iron tee is in perfect condition after 41 years' continuous use and is being re-installed for many more years of dependable service; the outlet composed of a substitute for Cast Iron Pipe is being scrapped. For literature on high-quality Cast Iron Pipe and Fittings, address Acipco office nearest you.

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Fifty Years of Service in Inspection and Tests

In 1938 the Robert H. Hunt Company, 2200 Insurance Exchange, Chicago, Ill., is celebrating the 50th anniversary of its organization. During this half-century its history has been one of constant expansion to keep pace with the desires and needs of its clients. From less than half a dozen pioneers it has grown to an international organization of several hundred chemists, metallurgists, engineers and inspectors, which maintains its own offices, permanent inspection units and laboratories conveniently located in relation to the principal industrial centers of the United States, Canada, England and continental Europe. Agents are retained in other parts of the world.

The present officers of Robert W. Hunt Co. are: J. C. Ogden, President; F. M. Randlett, Vice-President and General Manager; D. W. McNaugher, Vice-President and Treasurer; W. A. Gresens, Secretary and Assistant Treasurer.

Rubbish Collection in Baltimore, Md.

The accompanying illustration shows one of the fleet of new Autocar rubbish collection trucks which were recently put into service by the Street Cleaning Department, Baltimore, Md. To the eye of the layman the bodies of these trucks look top-heavy and awkward, but municipal engineers will recognize them as being a solution to the problem of hauling rubbish which runs into bulk more than it does into weight. Experience in rubbish collection has shown that it requires a vehicle of sturdy construction and dependable power because, while the actual loads are seldom severe, the constant stopping and starting, in front of every house in every block, can rack to pieces a vehicle of light and unsubstantial construction.

The chassis on which this 8-cubic-yard trash body is mounted is a Model RM of 164-inch wheelbase made by the Autocar Company, Ardmore, Pa. It is the lightest vehicle completely manufactured by this company and is equipped with an Autocar 3¾-inch Blue Streak engine and an Autocar RL rear axle. In addition, the city of Baltimore equipped this fleet with Wood 7DL hoists and 34 x 7 tires.

ONE OF THE FLEET OF AUTOCAR TRUCKS AND TRASH BODIES RECENTLY PURCHASED BY THE BUREAU OF STREET CLEANING, BALTIMORE, MD.

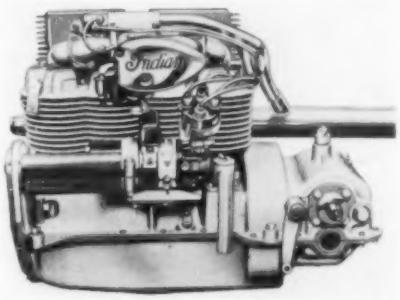
Branch Office for Simplex in Atlanta

Simplex Wire & Cable Co., Cambridge, Mass., has announced the opening of a branch office at 231 Healey Building, 57 Forsyth Street, Atlanta, Ga., under the management of A. Kenneth Felix.

1938 *Indian Motocycles Arrive*

Outstanding among the features of the 1938 Indian Motocycles—in addition of course to the new motor on the Indian "4,"—is the new "dual-action" oil pump assembly which puts 3 gallons of oil per hour into the motor at 60 mph, or twice as much as in the 1937 models, and returns the oil pumped into the base in sufficient quantity to prevent overloading. This new system also furnishes more oil for the cylinder walls and for those factors which reduce engine noise.

Features contributing to comfortable riding and to beauty are new handlebars and a new saddle unit, instrument panel, headlight and horn. The streamlined cast-aluminum panel includes a 120-mph lighted Corbin speedometer, ammeter, and water-proofed switch. By removing only two screws, the panel can be lifted, leaving the instruments in place for easy service work. The headlight has been shielded against dust and lowered to place the beam closer to the roadway. The Hi-Lo waterproofed headlight control switch for fingertip control is on the handlebar.



NEW INDIAN "4" AIR-COOLED "IN LINE" ENGINE

Deep-Well Pumps

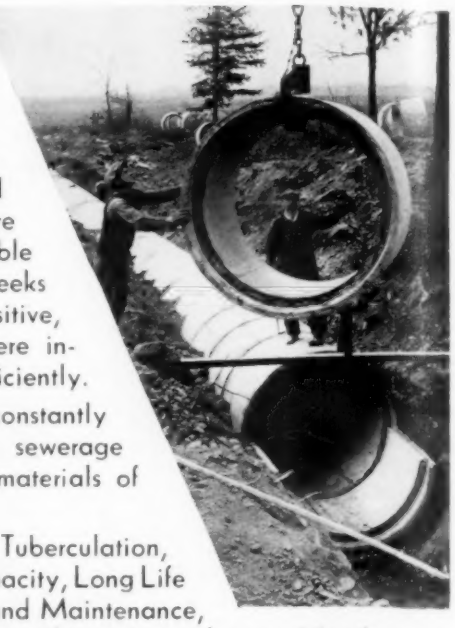
Deep-well centrifugal pumps in capacities from 300 to 50,000 gallons per hour are made by the American-Marsh Pumps, Inc., Battle Creek, Mich. The feature of these pumps is the submersible motor operating on either 60- or 50-cycle alternating current, either single or 3-phase. The rotor operates in the water, but the stator is completely protected from the water by a patented rust-proof stainless steel cylinder. Because the stator is surrounded by water, the motor runs very cool. Each motor bearing is separately enclosed in its own grease chamber, and the re-greasing of bearings is a very simple job, required only after several thousand operating hours or after two to ten years under normal conditions.

The American-Marsh UTA pumping unit consists of a vertical centrifugal pump, direct-connected to the submersible vertical motor. This compact assembly of pump and electric motor is suspended in the riser pipe and operates below water in the well. A waterproof cable conducts the current to the submerged motor. Delivery of water to the surface is made through a smooth, unobstructed pipe. Because the long line shaft, large column pipe and intermediate bearings are all eliminated, the deeper the well the more is saved by this type of installation.

Barnard, Consultant, Moves Lynchburg Office

Elmer E. Barnard, consulting engineer, specializing in water supply, water purification, sewerage and sewage treatment, has moved his office to 403-404 Lynch Building, Lynchburg, Va.

IS YOUR CITY UP TO DATE IN WATER SUPPLY AND SEWERAGE?



DON'T be dependent on antiquated systems. The average citizen is no longer content to wade through flooded streets in times of storm, nor is he satisfied with low pressure water service, discoloration and noticeable tastes or odors. Likewise, Big Industry seeks those communities where there is positive, ample supply of good water and where industrial wastes are disposed of efficiently.

Forward looking Cities will constantly improve their water supply and sewerage facilities, using modern, efficient materials of construction.

Freedom from Corrosion or Tuberculation, Permanently High Carrying Capacity, Long Life and Economy of Installation and Maintenance, make Lock Joint Concrete Pipe the premier choice of leading Cities and Industries for their important water or sewer mains.

PRESSURE · SEWER · SUBAQUEOUS · CULVERT

LOCK JOINT PIPE CO. AMPERE, N. J.

LOCK JOINT *Reinforced* **CONCRETE PIPE**

RITE-HITE

VALVE BOX TOP

Patent No. 1,852,928

RITE-HITE Valve Box Tops are semi-steel one-piece castings and are used for raising or lowering the height of old valve boxes without disturbing the paving.

Send for descriptive circular and delivered price.

TĀPAX

MANHOLE CUSHION

Patent No. 2,050,050

TAPAX takes all the noise and danger out of loose manholes. It stops the noise and the complaints in one operation.

Send for 100-ft. trial reel—for which we will bill you only $15—if not satisfied, send back what you have not used and we will cancel the charge, or ask us to tell you more about TAPAX.

TROHN'S SUPPLIES, INC.

203 HOYT AVE.

MAMARONECK, NEW YORK

MH VALVES

Double disc—parallel seat
Recommended for working pressure up to and including 175 pounds

Extra heavy—extra strong—extra safe
Highest Grade Materials
Finest Workmanship

BOOKLET

M. & H. VALVE & FITTINGS CO.

ANNISTON, ALA.

Fig. 67 A.W.W.A.

"Nice Work If You Can Get It"

Chlor-O-Feeder
Heavy Duty Midget

Examine a Chlor-O-Feeder closely if you want to see "nice work!" Count the number of parts—see for yourself that it is simpler and sturdier than most hypo-chlorite feeders.

"And You Can Get It"

(AT LOWER FIRST COST) if your plant is below 1-1½-MGD capacity for chlorination. You can get it for any size water or sewage plant for feeding any other chemical than chlorine. Write our nearest representative to "TELL YOU HOW."

PROPORTIONEERS, Inc.

Associated with Builders Iron Foundry

99 Codding Street Providence, R. I.

When Are Snow Loaders Justified?

By W. H. BOSWORTH
George Haiss Mfg. Co., Inc.,
New York City

UNDER ordinary conditions it is axiomatic that a city should consider the purchase of a snow loader when it has sufficient use for it and has the ability to buy the machine. Under normal conditions "sufficient use" for a snow loader is one thing, but under the present abnormal business conditions it is quite another. Practically all our cities now have men working on WPA or on some sort of relief who are available for disposing of snow on such a basis that there is practically no added expense involved in putting them to work. Provided there is enough work for a snow loader to do, it can be shown that its operation pays for itself by making unnecessary the hiring of so many trucks. It is fair to say that sufficient use for a snow loader to justify its purchase under present conditions is when snow-loader operation pays for itself by the saving in truck hire.

To show how this condition can arise, consider a snowfall of 6 inches, equivalent to about ½-inch of precipitation, on a street with 60 feet to be cleared, including sidewalks. This means 1.1 cubic yards per foot of length. Plowing and shoveling to windrows may reduce the volume by one-half, or to 0.55 cubic yard per foot. A total of 2,200 feet of streets at 0.55 cubic yard per foot is 1,200 cubic yards. A snow loader handling 5 cubic yards per minute, one-half its maximum output, for one-half the time, because of delays to trucks, will load 1,200 cubic yards in 8 hours.

On that basis, one Haiss Snow Loader working one 8-hour shift will clear up a 6-inch snowfall on 2,200 feet, 0.42-mile of 60-foot street. The cost table below shows that Snow Loader operation for 20 8-hour shifts is about the point where the truck hire saved pays for the Snow Loader operation. A city could therefore afford to own a Snow Loader under the following tabulated conditions:

CONDITIONS JUSTIFYING THE OWNERSHIP OF A SNOW LOADER UNDER PRESENT WPA AND RELIEF CONDITIONS

Average Annual Snowfall	Street to be Cleared Promptly Width*	Length
30 inches	50 feet	2 miles
30 "	60 "	1¾ "
30 "	80 "	1¼ "
40 "	50 "	1½ "
40 "	60 "	1¼ "
40 "	80 "	1 "
50 "	50 "	1¼ "
50 "	60 "	1 "
50 "	80 "	¾ "

* Including sidewalks.

The typical figures below show the cost of Snow Loader operation, but should be revised in accordance with local conditions:

Snow Loader cost	$5,000
Useful life	10 years
Dead storage	$150 per year
Annual overhaul	$50 per year
Annual depreciation and obsolescence, $5,000 divided by 10	$500
Average interest at 5 per cent	$125 per year

Operating cost per shift of 8 hours at 20 shifts per year:

Gasoline—25 gals. at 20c	$ 5.00
Oil and grease	.25
Operator	12.00
Repairs	4.00
Dead storage and upkeep $200, divided by 20	10.00
Interest $125, divided by 20	6.25
Depreciation and obsolescence $500, divided by 20	25.00
Total expense per shift of 8 hours	$62.50
Capacity per shift, minimum 1,200 cubic yards	
Loading cost per yard	5.2c

Comparison with Hand Loading

Then the question arises: How does this compare with hand loading? One man will shovel 15 cubic yards of snow into a high truck in an 8-hour shift. Eight gangs of ten men each, or 80 men, therefore, have the loading ability of one Snow Loader. The men will usually be shoveling half the time, so that there will be four trucks standing being loaded at any one time. There never will be more than one truck standing being loaded by the loader. There are therefore three extra trucks to be charged to hand loading. If the hire of these trucks is as little as $21 per shift, these three extra trucks cost the city as much as the loader operation per shift.

Therefore, using the Snow Loader permits hiring the same 80 men without additional expense. If some of the Snow Loader costs are less than indicated in the table above, or if truck hire amounts to more than $21 per shift, then the city can afford to hire more men. Almost all the 80 men can be used away from the business section shoveling crosswalks, etc.

Instead of having eight shovel gangs spotted throughout the business district, and with the extra trucks causing congestion, there is only one congested spot at a time with the loader, and that is where the loader is operating; the loader takes up practically no more room than a truck, and, therefore, congestion is reduced from the standpoint of space required, in addition to the greater speed with which the snow is cleared out and away.

Method of Operation

The method of operating a Snow Loader is first to clear the center of the street with a snow-plow, mounted on a truck or a tractor. The snow is pushed over into windrows along the curb. The sidewalks are also shoveled toward the curb. In the case of light snowfall, the windrows should be bulldozed into piles with an average cross-section of at least 7 feet by 2 feet so that the Snow Loader can operate at reasonable efficiency. The loader then is nosed into these windrows, usually with the operator's platform on the curb side, and the snow is loaded into trucks and carried away to be dumped.

The characteristics of the city under consideration will have much to do with the advisability of purchasing a Snow Loader, in addition to the factors of length of streets which should be immediately cleared, and the average annual snowfall. Suburbs around large centers are more likely to be Snow-Loader-conscious than towns of the same size in isolated locations, because the residents to a great extent are commuters and are apt to see snow loaders operating in cities, and also to find it necessary to get into the city under any and all circumstances.

Worthington Buys Into Moore Steam Turbine

Worthington Pump and Machinery Corp., Harrison, N. J., has recently announced the acquisition of an interest in the Moore Steam Turbine Corp., Wellsville, N. Y. This association adds to the list of products sponsored by Worthington an extensive line of steam turbine equipment and in turn provides Moore with the benefit of Worthington's resources.

Catasauqua, Pa., Plant of Graver Enlarged

In order to take care of its increased business in the eastern territory, Graver Tank and Mfg. Co., Inc., East Chicago, Ind., has enlarged the manufacturing facilities of its Catasauqua, Pa., plant by the addition of several new modern buildings with the latest equipment.

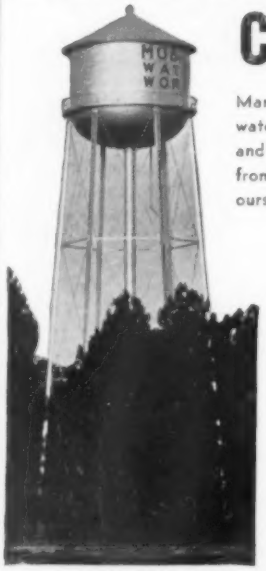
New Wheeled Roller Shown by Littleford

One of the features of the exhibit of Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio, at the Cleveland Road Show was the new Littleford motorized roller, formerly marketed by the Wheeled Roller Corporation, of San Antonio, Texas. While the roller is substantially the same unit, a number of improvements have been made, including the addition of brakes and a water tank. A Wisconsin motor has been incorporated in the unit. The patented up-and-over tongue idea, to instantly convert the unit from a roller to a trailer, has been retained.

THE NEW LITTLEFORD WHEELED ROLLER IN ACTION

Tank Builders For Over 80 Years!

Cities Served By Cole Tanks



Many municipal or privately-owned water works have had us build tanks and elevated towers to specification from their own engineer's design or ours. Some of the cities served are:

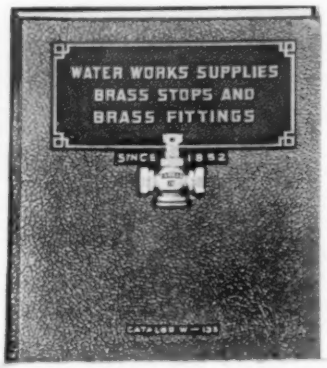
CHARLOTTE, N. C. (Million-gallon tank)
CLEARWATER ISLAND, FLA.
DANVILLE, KY.
MOBILE, ALA.
McPHERSON, KANS.
ST. PETERSBURG, FLA.
ALBANY, GA.
GASTONIA, N. C. (Million-gallon tank)
CEDARTOWN, GA.
SPARTANBURG, S. C. (Million and a half gallons)
NEWNAN, GA.

In addition to water tanks we also build tanks for acid, dye, oil, creosote, chemicals, etc., as well as other fabricated products of Quality steel and alloy steel plate. Let us figure on your requirements.

An erection for Mobile Water Works

Write for "Tank Talk"—No. 8-A

R. D. COLE MFG. CO.
Established 1854
NEWNAN, GEORGIA



One of the Oldest Manufacturers in the Water Works Field
PRESENTS
this New
FARNAN

PA

MIS

Johnson City Fire Hydrant

Not just another hydrant—but one designed to overcome difficulties heretofore troublesome to water works men and fire chiefs . . . with an *extra factor of safety* for severe service.

Not easily damaged; but if ever injured, easily and quickly repaired without shutting off the line and without digging.

Write for circular giving complete details.

Johnson City Foundry & Machine Co.
Johnson City, Tenn.

based.

At left—500,000 gallon elevated water storage tank

The William S. Hewett System
549 W. Washington St., Chicago, Ill.

50 Models

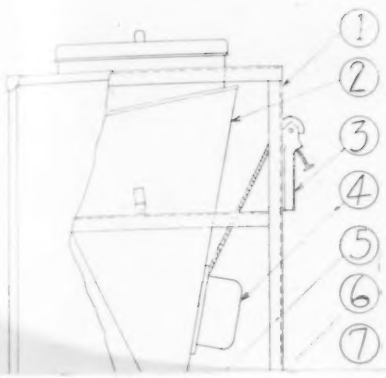
Elliott

$50 To $5000

ADDRESSING MACHINES

R. C. A. VICTOR of Camden, N. J. is one of many prominent concerns that have recently installed Elliott Addressing Machines for Pay Roll work. Pay Roll Sheets are addressed visibly and ejected automatically.

Made in Cambridge, Mass. Sold everywhere. Look in your telephone book.



Driveaway of Trucks for New York City

The last consignment of Gar Wood refuse body units for the New York City Department of Sanitation took part in a driveaway from the factory of the Gar Wood Industries, Inc., Detroit, Mich., a short time ago. The units were built at the Gar Wood Highland Park plant, and the complete order totaled 300 units. This modern body unit, fabricated with Yoloy steel, is mounted on a GMC chassis, contains a mechanical refuse loader, and is equipped with Gar Wood dual, telescopic, hydraulic hoists.

AGES

SSING

ciprocated by a small electro-magnet, causes the dry chemicals to flow by vibration. The rate of the flow is controlled by varying the current to the trough's electric magnet through a rheostat that, with a calibrated, indicating meter, is mounted on a control panel on one side of the machine.

Material to be fed is stored in a built-in hopper which is equipped with a small, noiseless, electro-magnet vibrator that keeps the contents agitated to prevent bridging over and plugging up. An overhead chute can be sealed to the top of the cabinet for refilling the hopper from the floor above.

The self-contained unit operates on a 110-volt AC lighting circuit consuming very little power.

The capacity of these machines ranges from 1 pound per hour up to 100 pounds per hour of light, fluffy material such as activated carbon, on up to 250 pounds per hour of heavier material such as hydrated lime, and as much as 800 pounds per hour of heavy materials like alum and soda ash.

Case Model CI tractors made by J. I. Case Co., Inc., Racine, Wis., has been developed by that company to speed up snow removal. A heavy curb-climbing wheel is located on the forward end of the moldboard. This 24-inch wheel is $\frac{3}{8}$-inch thick and mounted on roller bearings. When it hits the curb, the climbing wheel automatically lifts the plow to the sidewalk. Another curb-lifting device for the front end of the tractor is located directly behind the moldboard. This consists of a sled-runner-shaped frame, securely attached under the front axle. A solid rubber-tired wheel turning on roller bearings is mounted just ahead of the front axle. As the unit mounts the curb, this device lifts the front end of the tractor part of the way so that the front tractor wheel easily mounts the curb.

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MOUNTED ON GMC TRUCKS FOR ...NT OF SANITATION

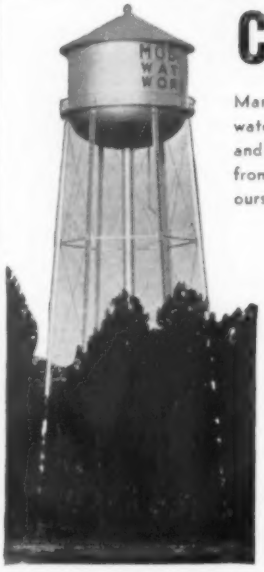
...v President Elected Linn Manufacturing ...poration

At a recent meeting of the Board of Directors of The Linn Manufacturing Corporation, Morris, N. Y., the resignation of George Whitman as President was accepted with regret, and F. R. Van Rensselaer, formerly Vice-President, was elected President to succeed Mr. Whitman. Philip W. Sloan was elected Vice-President to succeed Mr. Van Rensselaer.

THE NEW J. I. CASE EASY RUNNING SIDEWALK PLOW

Tank Builders For Over 80 Years!

Cities Served By Cole Tanks



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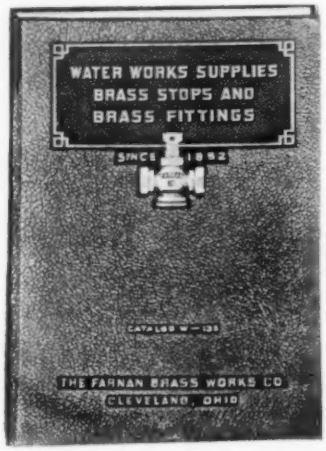

One of the Oldest Manufacturers in the Water Works Field
PRESENTS
this New
FARNAN 1938 CATALOG

The Ideal of Highest Quality in Manufacture, Materials and Service established by James Farnan eighty-six years ago is exemplified by every Farnan product made today.

Our new 1938 Catalog is now available—accurately illustrating and describing our complete line of Corporation Stops, Curb Stops, Couplings and Fittings for copper pipe, iron pipe and lead pipe services.

Write today, and get your copy.

THE FARNAN BRASS WORKS CO.
Established 1852
Cleveland Ohio

Johnson City Fire Hydrant

Not just another hydrant—but one designed to overcome difficulties heretofore troublesome to water works men and fire chiefs . . . with an *extra factor of safety* for severe service.

Not easily damaged; but *if* ever injured, easily and quickly repaired without shutting off the line and without digging.

Write for circular giving complete details.

Johnson City Foundry & Machine Co.
Johnson City, Tenn.

THE WILLIAM S. HEWETT SYSTEM

of reinforced construction

gives you a structure that WILL NOT CRACK.

Write for Bulletin A, showing various designs of tanks, reservoirs and standpipes; and Bulletin B, explaining the theories on which the system is based.

At left—500,000 gallon elevated water storage tank

The William S. Hewett System
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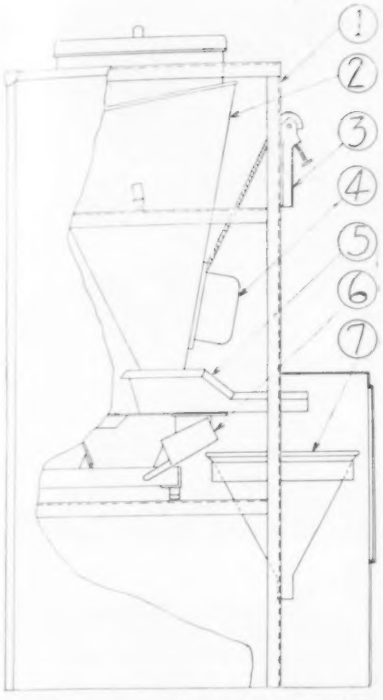

DIAGRAM OF A SYNTRON VIBRA-FLOW CHEMICAL DRY FEEDER

1. Frame. 2. Supply hopper. 3. Hopper adjustment. 4. Hopper vibrator. 5. "Vibra-Flow" feeder. 6. "Vibra-Flow" magnet. 7. Solution pot

Cabinet Model of Dry Feeder Machine

A fully enclosed, dust-tight dry chemical feeder, attractively finished in ivory-colored enamel and polished aluminum, has recently been announced by the Syntron Co., 430 Lexington Avenue, Homer City, Pa. The major feature of this machine is the use of a Vibra-Flow feeder conveyor to control the rate of feed of the chemical. This conveyor is a trough which, mounted on leaf springs and reciprocated by a small electro-magnet, causes the dry chemicals to flow by vibration. The rate of the flow is controlled by varying the current to the trough's electric magnet through a rheostat that, with a calibrated, indicating meter, is mounted on a control panel on one side of the machine.

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Seen in the picture are Ralph S. Jenkins, Vice-President in charge of manufacturing; Gar Wood, President; W. C. Robertson, Special Eastern Representative; C. W. Wood, Highland Park Plant Manager, Gar Wood Industries, Inc.; and C. Hix Jones of the Youngstown Sheet and Tube Co.

A DRIVEAWAY OF GAR WOOD REFUSE BODIES MOUNTED ON GMC TRUCKS FOR NEW YORK CITY'S DEPARTMENT OF SANITATION

One-Way Sidewalk Plows

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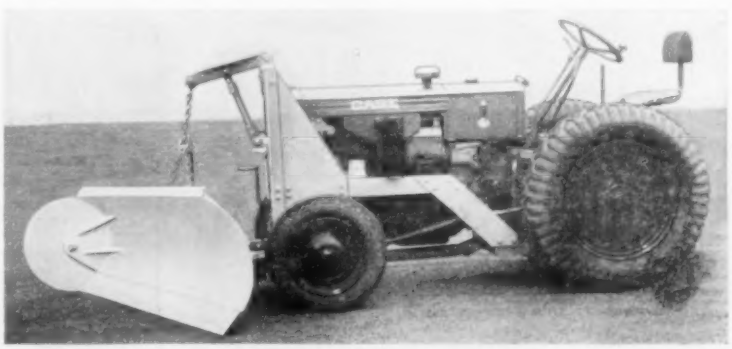


THE NEW J. I. CASE EASY RUNNING SIDEWALK PLOW

MUD-JACK METHOD

Sunken concrete slab is raised to correct grade by the Mud-Jack Method — preventing breakage of the slab and eliminating reconstruction costs.

Increase the life of concrete slab by the Mud-Jack Method. Write for information about economical maintenance of curb, gutter, and sidewalk slab.

KOEHRING COMPANY
Pavers • Mixers • Shovels • Cranes
Draglines • Dumptors • Mud-Jacks
3026 WEST CONCORDIA AVE. MILWAUKEE, WISCONSIN

USE G-E POLICE RADIO FOR BETTER PROTECTION

Give your city the *continuous* protection afforded by G-E police radio equipment—reliable, sturdily constructed, carefully engineered by an experienced leader in radio communication. Radio Department, General Electric, Schenectady, N. Y.

GENERAL ELECTRIC 900-6

GRAVELY SNOW PLOW

Makes an All-Year GRAVELY Machine Out of Your MOWER

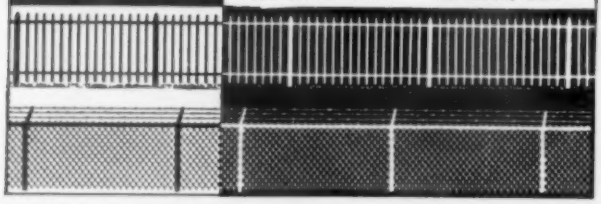
Quickly converts your Mower into a capable Sidewalk Snow Plow, for paths 40-54 inches wide. Goes places where the BIG Plow would get stuck!

A mower in summer, a sidewalk snow plow in winter — TWO effective machines at only slightly more than the price of ONE! Prices and specifications on request.

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

FENCE for every PUBLIC PROPERTY need

Stewart FENCES
IRON AND CHAINLINK WIRE
New Catalog Sent Upon Request
THE STEWART IRON WORKS CO., INC.
421 Stewart Block Cincinnati, Ohio



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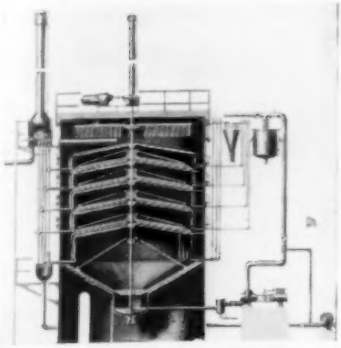
TRAILER TOOL BOXES FOR SERVICE DEPARTMENTS

MOHAWK ASPHALT HEATER CO.
Frankfort New York



THE NEW SEIP CLARIFIER

A Multi-Tray Clarifier

A new multi-tray clarifier, designed and built on an entirely new principle, has been announced by Graver Tank & Manufacturing Co., Inc., East Chicago, Ind. Sludge filtration is upward by means of a periphery intake channel. As compared with center intake channels, common to most settlers, the intake in the new Seip clarifier, according to the manufacturers, is ten times as large, which reduces proportionately the speed of incoming liquids and results in minimum disturbance to the liquid.

The Seip clarifier consists of one, two or as many as seven round, inverted trays supported by brackets attached to the inner side of the tank shell. The space within each tray forms a settling chamber, and if the solution to be clarified is thick and has solids in suspension, these solids collect on the top of each tray, which acts as a bottom for the settling chamber above it, and functions as an entangling medium for light-weight particles which would not otherwise quickly settle.

Immediately above each tray there is a set of movable scrapers to carry away the surplus sludge. These scrapers are operated from a central shaft, the speed of which can be changed to suit the specific gravity of the sludge encountered and the depth of sludge desired.

There is a liquid draw-off in the top of each chamber, located near the central shaft and as far as possible from the intake pipes, to allow a longer time for settling and the production of a clearer, cleaner liquid.

The Seip clarifier, built for hot or cold liquids, is furnished complete with a vertical tank and fittings, or can be accommodated to any existing tank. While no installations have been made in the water-works or sewage-treatment field, the manufacturer believes that this clarifier will serve them well.

Stevenson Joins Metcalf & Eddy

Metcalf & Eddy, engineers, Statler Building, Boston, Mass., have announced that W. L. Stevenson, formerly Chief Engineer of the Pennsylvania Department of Health, has become associated with the organization, with offices in the Telegraph Building, Harrisburg, Pa.

M. H. Rhodes, Inc., Moves Mark Time Offices

Executive and general sales offices of M. H. Rhodes, Inc., manufacturer of a large line of range, washer and appliance timers, wall switches, coin meters and parking meters, have been moved from Rockefeller Center, New York City, to its factory at 30 Bartholomew Avenue, Hartford, Conn. The increase in the acceptance of Mark Time timing devices has occasioned constant enlargement of the executive and sales offices in the last two years. In 1937 large quarters were taken at 9 Rockefeller Plaza. The move to Hartford enables Mr. M. H. Rhodes to give his personal attention to production as well as to a number of new developments to be announced soon.

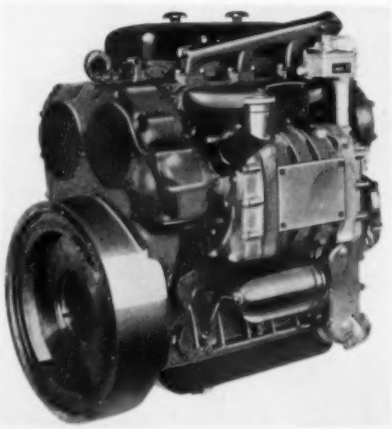
New Diesel Line by General Motors

General Motors Sales Corporation has announced the establishment of mass production and sale of small light-weight, 2-cycle diesel engines for all purposes. Until now, General Motors has limited its diesel activities to the building of larger 2-cycle engines of from 600 to 1,200 hp. The new engine extends this line in varying sizes down to a 1-cylinder, 22-hp model.

The announcement comes from the Diesel Engine Division, General Motors Sales Corporation, Cleveland, Ohio, that these small model diesel engines and generators will be produced as "packaged power" units in either stationary or portable models, which can be quickly set up to power small industrial operations, theaters, hospitals, irrigation projects, parking lots and other developments. Also, the engines can be employed for any direct-drive prime mover operations, such as tractors, hoists, trucks and pumps. The complete line of General Motors diesel engines, ranging from 22 to 1,200 hp will be built in such a manner that additional horsepower can easily be obtained by the use of additional units.

The engines will be built in three General Motors factories at Detroit, Cleveland, and LaGrange, Ill. The new factory of the Detroit Diesel Engine Division was placed in operation in January simultaneously with the announcement of the enlarged diesel activities of the company. The Detroit factory will produce the smaller engine with from 22 to 160 hp and with from one to six cylinders.

The Cleveland Diesel Engine Division of General Motors, formerly the Wynton Manufacturing Corporation, will manufacture a full line of medium-size engines, ranging from 200 to 400 hp, and a new engine factory at the Electro-Motive Corporation's diesel locomotive plant at LaGrange will be in operation within a few months for the manufacture of the larger engines.

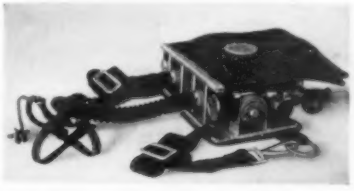


THE MODEL 3-71, ONE OF THE NEW GENERAL MOTORS LINE OF SMALL DIESEL ENGINES

New Light-Weight Oxygen Apparatus

Complete respiratory protection in any atmosphere for at least one hour under the most severe working conditions is afforded by the newly developed M. S. A. light-weight one-hour oxygen breathing apparatus which has been approved by the U. S. Bureau of Mines.

Weighing only 18 pounds, this apparatus is compact, carries comfortably, and is positive and fully automatic in supplying the required amount of oxygen.



THE NEW M.S.A. ONE-HOUR OXYGEN BREATHING APPARATUS

Descriptive literature may be secured by readers of this magazine by writing to the manufacturer, Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa., and asking for Bulletin No. BM-1.

Low-Pressure Tires on Motor Grader

Caterpillar Tractor Co., Peoria, Ill., one of the earliest users of large single low-pressure tires on tandem-drive motor graders, has now adopted this type of tire as standard on its single drive No. 10 and diesel No. 10 Auto Patrols. The first showing of this new tire equipment was at the Road Show in Cleveland.

Officials of the Caterpillar Company report that long and careful experiments covering a period of more than a year have been made with the single mounted low-pressure tires in order to develop a tire of proper size and to determine the correct inflation for best performance. The single low-pressure tires give almost double the area of ground contact over dual high-pressure tires, and therefore greatly increase traction.

HONOR ROLL

Of Cities Relighting Main Traffic Arteries To Save Lives

DETROIT
SYRACUSE
EASTON
AKRON
PAWTUCKET
DE PERE

CONGRATULATIONS to the cities who took the right step toward traffic safety—the relighting of main traffic arteries. They have set an example which might well be followed by other cities all over the country.

Among such progressive cities are Pawtucket, R. I., and DePere, Wis., who relighted their thoroughfares to provide greater safety at night for pedestrians and motorists. Easton, Pa., made its place on the honor roll by being the first city in the country to install safety lighting on all its main-approach arteries. Syracuse joined the list by effecting a 55 per cent night-accident-rate reduction on the main thoroughfares which were relighted. Akron established a plan to relight main routes in every part of the city within the next few years—South High Street was the first street in this city to be made safer at night. In Detroit night accidents were reduced 82 per cent on 31 miles of dangerous thoroughfares by safety lighting. For this outstanding improvement in civic safety, Detroit deserves the title, *City of the Year in Lighting for Safety.*

Since poorly lighted main traffic arteries are ten times more dangerous at night than during the day, call your lighting specialist in the nearest General Electric sales office for recommendations for modernizing street lighting on your thoroughfares. Personal and property damage, and high insurance rates cost many times more than improved lighting. Why not take steps *now* to put your city on the Honor Roll? Remember, poorly lighted traffic thoroughfares are TEN TIMES MORE DANGEROUS AT NIGHT THAN DURING THE DAY. General Electric, Schenectady, N. Y.

THIS IS THE FIRST OF A SERIES OF ADVERTISEMENTS HONORING PROGRESSIVE CITIES.

GENERAL ELECTRIC

Filing No. 3010

500-268

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

New York's West Side Development at Night

By ROBERT MOSES
Commissioner, Department of Parks, New York City

THE utility and beauty of a street in the daytime are whatever they intrinsically are; but the night values of these qualities are determined very largely by the lighting. This is particularly the case where the street is a fast, non-stop traffic artery such as New York's West Side Development.

The history and scope of this project were outlined in the November issue of this magazine. It is the 72nd to Dyckman Street link that we are now concerned with. This is the link between the north end of the West Side Express Highway and the south end of the Henry Hudson Parkway connecting with the Saw Mill River Parkway of the Westchester County parkway system leading generally northward and by the Bear Mountain and Mid-Hudson highway bridges giving access westward. When the strip of express highway from the Battery to Canal Street has been constructed, a non-stop highway will have been provided from the lower tip of Manhattan Island on out of the Greater City.

The lighting on the Express Highway consists of special standards and luminaires, and on the Henry Hudson Parkway above the George Washington Bridge of single or twin luminaires suspended from a wooden cross-arm on cedar poles, in accordance with the city's policy on its parkways.

The lighting of the West Side Development, between 72nd Street and the Bridge, is a distinct departure from the above standard parkway unit. Madigan-Hyland, the engineers who designed the Development, including the lighting standards and lighting units, were instructed to provide their best. This has taken the form of a cast-iron four-piece standard, having a single lighting unit, consisting of a malleable-iron-lantern

Photograph by Paul J. Woolf, New York City
79TH STREET CIRCLES OF THE WEST SIDE DEVELOPMENT LINK OF NEW YORK'S NON-STOP STREET FROM THE BATTERY TO WESTCHESTER COUNTY

support and lantern with a cast-aluminum dome and finial. The standard is reinforced with an interior pipe shaft, consisting of 4½-inch and 3½-inch extra-heavy copper bearing steel pipes swaged together with an 18-inch joint. The pipe shaft is entirely concealed inside the cast-iron standard.

The specially designed lantern is mounted on the head of the cast-iron standard and the reinforcing interior pipe shaft. The design of the standard allows for substitution of a short base so that standards may be placed on parapets where necessary. Both types of bases are interchangeable with the rest of the standard.

A 15,000-lumen lamp is set below an Alzac aluminum reflector secured inside the cast-aluminum dome, which is hinged for servicing. The dome and the lantern are hexagonal, and the lantern is closed with mud-roughened diffusing glass panels and a circular diffusing-glass bottom. The lantern is designed with thin mullions so as to obstruct as little light as possible. Monel-metal screws, bolts, and fittings are used throughout on both the standards and lanterns.

TYPICAL LIGHTING UNITS (73D STREET)

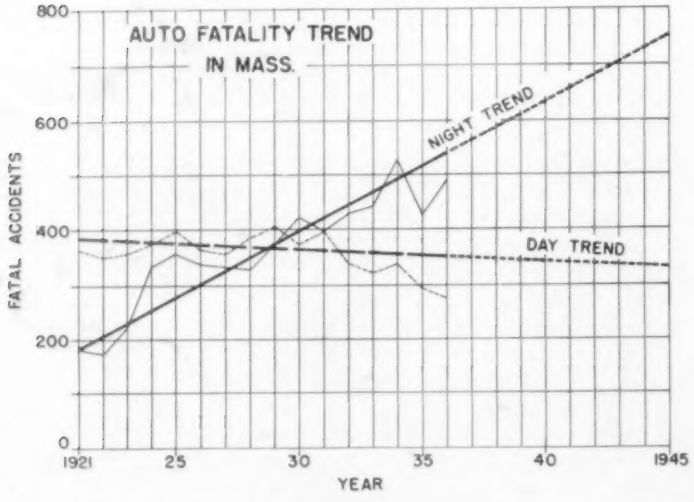
The unit of standard and lantern is suitable for use on any project similar to the West Side Development, where excellence of design and good night lighting are prime factors. Complete with pipe shaft, the unit weighs approximately 1,370 pounds.

The Department of Water Supply, Gas & Electricity, which has charge of all city street lighting, designed the lighting system, with the 15,000-lumen units spaced generally 95 feet apart and mounted 20½ feet above the roadway. They are carried on the center island.

Traffic on the West Side Development amounts to 62,300 vehicles per 24-hour day, night traffic at present counting 28,000 vehicles. The peak hour carries 4,616 vehicles, with two-thirds of the traffic northbound.

The Killer—In Massachusetts

By JOHN L. SULLIVAN
Chief of Police at Pittsfield, Mass; Treasurer of the International Association of Chiefs of Police



IF I were asked to name the public enemies at large in Massachusetts, darkness would be up near the top of the list. Darkness is a killer. There can be little doubt of it when a comparison is made of the persons killed day and night in this state. Until it is banished by better lighting, particularly on the main highways of travel, Massachusetts will have a killer at large whose devastating work is outrageous.

The accompanying chart of Massachusetts traffic deaths, day and night, shows the present and future situation. After studying it, consider this fact: 75 *to* 80 *per cent of the traffic moves in daylight, yet more than* 60 *per cent of all fatal traffic accidents occurred at night during the last four years.* The city of Pittsfield is no exception. Of the eleven fatal accidents which happened here during 1937, eight were night accidents.

Examining the state's 1936 fatal-accident statistics in detail, we find the location of these night accidents to be about equally divided between city and rural areas—46 per cent rural and 54 per cent urban.

Surveys in this and other states show that the main avenues are the most dangerous. My own study on eight miles of the heavy-traffic highway Route 20 from the New York State line into Pittsfield shows that 54 persons have been killed on this highway during the last 12 years. Sixty-eight per cent of these deaths occurred at night, despite smaller traffic then.

Why are more people being killed at night?

Leading traffic experts agree that poor street lighting is the reason. Within city limits the majority of arterial streets are poorly lighted. On heavy-traffic highways outside city limits, the motorist must depend on his headlights, which, according to lighting engineers, have certain limitations. If motorists had to drive under poor visibility conditions 24 hours a day, the national traffic death rate would be nearer 100,000 annually than 38,000.

Most of the traffic fatalities in Massachusetts are happening at night. They can be decreased on the main arteries in this state just as they have been in other states where lighting conditions have been improved. It is time for officials of our state and our cities to inquire seriously into modern lighting facilities and use them. Representatives of the Automobile Club in Berkshire County demand action in this section of Massachusetts. Other groups in the state are beginning to stress the necessity of decreasing night fatalities.

Mercury Incandescent Light in Pueblo, Colo.

Forty-nine mercury-incandescent luminaires now light eight blocks on Santa Fe Avenue in Pueblo, Colo. The installation was made by the Southern Colorado Power Co., and is the first of its kind in the Rocky Mountains. The luminaire consists of a 200-watt incandescent lamp and a 400-watt high-intensity mercury-vapor lamp enclosed by a rippled-glass globe. Units are staggered six to a city block and are mounted 19 feet above the pavement on steel standards spaced 102 feet apart.

The lighting has stimulated such public interest that merchants on other business streets, says the General Electric Co., "have banded together to obtain improved lighting for the thoroughfares passing their shops."

MARCH, 1938

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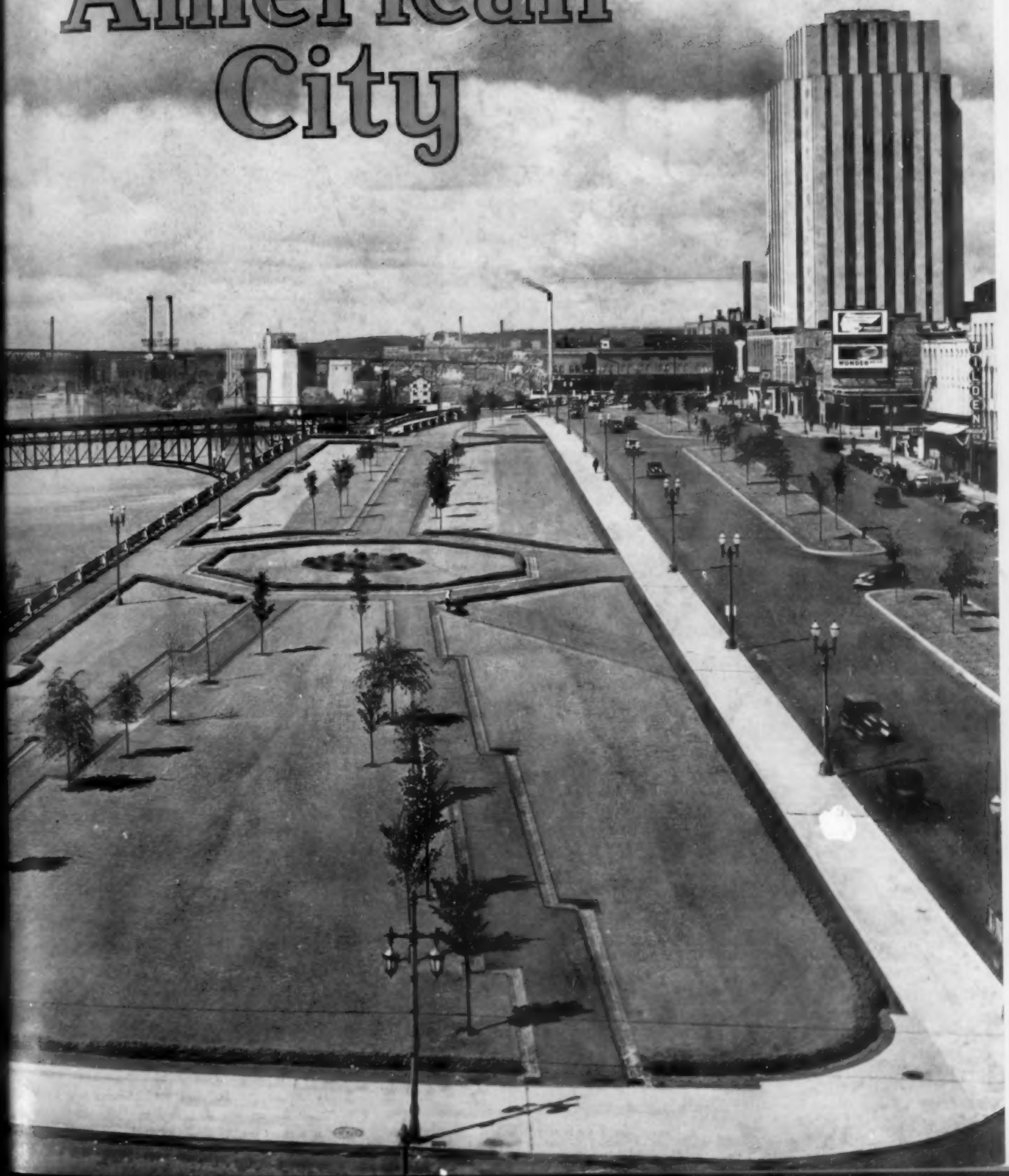
The American City